

# THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. 87.

NEW YORK, SATURDAY, DECEMBER 9, 1905.

No. 24.

## ORIGINAL ARTICLES.

### THE ETIOLOGY OF SYPHILIS.<sup>1</sup>

BY SIMON FLEXNER, M.D.,  
OF NEW YORK.

I AM very sensible of the great honor which you have conferred upon me in extending to me the invitation to deliver this lecture. I consider myself highly favored by it, and I regard myself also as fortunate in being able to present to you a subject of such great intrinsic interest as syphilis, and one which the experimental studies of the past several years have done so much to clear up. The history of the investigations into the cause of the infectious diseases has taught us anew that discovery in science is not an accidental occurrence; it has, indeed, emphasized the fact already established for the physical sciences, that progress proceeds along definite roads, although these roads are rarely straight and direct. There is, however, an orderly procession in discovery—the work of one era preparing the way for that of the next—although the existence of this order is not always at once apparent. The topic which is to occupy us for the next hour is a fruitful illustration of the manner in which medical discovery has come about; how by successive and careful observation a knowledge at once deep and convincing has grown up, although this knowledge has for a time rested upon data imperfectly founded.

We cannot, it is true, definitely maintain that the etiology of syphilis has been certainly and wholly resolved. And yet we are permitted to indulge the hope that this great event has possibly been achieved. We have, in any case, as a permanent addition to the knowledge of syphilis, many important facts which come to us on established grounds, and which cannot be affected by any fate overtaking the recent discovery of a spiral organism in syphilitic products.

The successful inoculation of monkeys and apes with syphilitic virus has revived interest in the question of transmission of syphilis to the lower animals. Were it merely a matter of susceptibility to infection in these animals the question would have a theoretical interest only. But when it is considered that there are many problems of syphilitic infection which have failed of solution because observation was limited wholly to man, and when it is further recalled that the experimental study of other diseases has given the keys to unlock what formerly appeared as insuperable difficulties, we are permitted to believe that the study of the difficult and tangled subject of syphilis in man may also be aided through this means.

<sup>1</sup> The Wesley M. Carpenter Lecture, delivered before the New York Academy of Medicine, October 19, 1905.

We owe to Metschnikoff and Roux<sup>1</sup> the demonstration that apes are subject to inoculation with syphilitic virus. The earlier literature, as you all are aware, contains references to the possibility of communicating syphilis to different classes of vertebrates. While in most instances the attempts were regarded as failures, there are several experiments recorded for which success has been claimed. Auzias-Turenne<sup>2</sup> believed in 1866 that he had produced syphilis in the cat; and the next year Legros and Lanceraux<sup>3</sup> described specific lesions in the guinea-pig. Swine were thought especially subject to inoculation, and at one period they were used for numerous experiments. Martineau<sup>4</sup>, Adrian<sup>5</sup>, Hügel and Holzhauer<sup>6</sup> all recorded successful results; but all these mistaken observations were set aside by Neisser's<sup>7</sup> conclusive experiments.

The case is, however, quite different in respect to the inoculation of monkeys, which were chosen because of their closer zoological relationship to man. Klebs<sup>8</sup>, in 1879, was the first, I think, to employ these animals. He used a fragment of a primary lesion in man for inoculation; but this experiment is, unfortunately, unconvincing for the reason that the species of monkey is not stated, and secondary, papular lesions are described as having appeared on several parts of the body six weeks after inoculation. A second successful result is reported by Martineau and Hamonic<sup>9</sup>, who, in 1882, inoculated a macac monkey. They say that four weeks later the animal developed primary syphilitic lesions at the place of inoculation, and these were followed by adenites and ulcerations of the mouth. There would be nothing essentially impossible in these experiments were it not that later studies have shown conclusively that the lower monkeys are not subject to the secondary stages of the disease, or, at least, that there is no similarity between the secondary phenomena as observed in man and the remote ones seen in these animals. Moreover, the studies which immediately succeed those of Klebs and Martineau were uniformly negative in result, and tended, therefore, still further to discredit the supposed successful experiments. There can, I think, be no doubt that Sperr<sup>10</sup> in 1886 and 1888 proved the occasional transmissibility of human syphilis to the macac species of monkey. Of 46 monkeys which he

<sup>1</sup> Annales de l'Institut Pasteur, 1903, XVII, 809.

<sup>2</sup> La Syphilisation, 1878, p. 422. Cited by Metschnikoff and Roux.

<sup>3</sup> Cited by Roux and Metschnikoff.

<sup>4</sup> Ibid.

<sup>5</sup> Archiv f. Dermatologie u. Syphilis, 1899, XLVII, 163.

<sup>6</sup> Ibid., 1900, LI, 225.

<sup>7</sup> Ibid., 1902, LIX, 163.

<sup>8</sup> Archiv für experimentelle Pathologie, 1879, X, 161.

<sup>9</sup> Bulletin de l'Acad. de méd., 1882, XI, 1007.

<sup>10</sup> Œuvres complètes, t. II, Paris, 1896, pp. 614-616. Cited by Metschnikoff and Roux.

inoculated, three only gave positive results. These last belonged to the macac species and were all infected with the same material. The first developed a chancre-like lesion, the beginning of which was noted twenty-four days after inoculation; from the first a second, and from the second a third animal of the same species were infected. In each instance there was a long period of inoculation, and the healing process was slow. In the second animal three months, and in the third 52 days elapsed between the appearance and cicatrization of the lesions. These experiments, therefore, may be taken as proving not only the susceptibility of certain monkeys to the local lesions of syphilis, but also the possibility of successive transmission of the virus from animal to animal.

Interesting and important as these results are, they are too irregular and imperfect to serve as an experimental basis for the study of the pathology of syphilis. Since in far the greater number of tests the effects were nil, the positive results partake of the nature of accidents, with which scientific medicine cannot deal adequately. This is perhaps the reason why the subject remained so long in abeyance until interest in it was revived by Metschnikoff and Roux's<sup>12</sup> announcement in 1903 that the higher or anthropoid apes were subjects to syphilitic inoculation, the disease manifesting itself in the form of primary lesions, which, after an interval of time, are followed by adenitis and an eruption of syphilitic papules. In their publication they draw attention to an unpublished result of Maurice and Charles Nicolle, who also succeeded in causing in the lower monkeys local syphilitic lesions of a papular and ulcerative character.

Just as the earlier experimenters were led to employ the monkey because of its relationship with man, so were Roux and Metschnikoff led to their choice by considerations of closer zoological approximation. The choice of the chimpanzee was peculiarly fortunate. This species has proven to be readily subject to inoculation with the virus of syphilis, to which it reacts in a constant and characteristic manner. Hence the chimpanzee is adapted for those refined experiments which have already extended, and, doubtless, will still further extend our knowledge of the nature and mode of action of the syphilitic poison.

Since this subject is of such great theoretical and practical interest, it may be permissible to describe briefly one or two successful experiments. The first ape inoculated was a female chimpanzee about two years old. The source of the virus was (1) serous fluid from a chancre in man, and the site of inoculation the prepuce of the clitoris; and (2) material from a mucous plaque, and the site of inoculation the border of the eye-brow. Five days after the first inoculation a second one was made, with virus from a chancre. The original scarifications quickly

healed, after which no visible lesions appeared until the twenty-sixth day following the first inoculations. A small vesicle, which later increased in size and took on indurative characters, was noted on the prepuce at this time. The fully developed lesion was examined by Fournier, du Castel, Hollochau and Marc Sée, who pronounced it a hard chancre. It had been noted at the time of inoculation that the lymphatic glands of the groin and elsewhere were not readily palpable; with the appearance of the local lesion the lymphatic glands of the groin could be easily felt, and some days later they had increased in volume, those on the side of the ulcer being the larger.

Just one month later, that is fifty-six days after the first inoculation, papules were noted upon the thighs, abdomen and back. They numbered fifteen, were round and of the diameter of a five-cent piece. The peripheral zone was at first red, and later became pigmented; the mid zone was paler; the center came to be covered with a scaly crust. On scratching, serum was exuded. The papules endured for a month and then began to heal; but they were still visible some weeks later, at the time of the death of the animal, which was caused by the pneumococcus, to which micro-organism the chimpanzee in confinement is peculiarly susceptible.

This result points a new direction in which to pursue the experimental study of human infectious disease. In many instances there is only a rough analogy between the natural disease in man and the counterfeit produced in the lower animals. That our knowledge of infectious diseases, perhaps even of other diseases not now open to experimental study, might possibly be greatly extended by the use of animals which are more closely related to man than the usual laboratory ones, can hardly be questioned. The difficulties in the way of accomplishing such an undertaking on a large scale are immense and not readily to be overcome. We detect, however, a still further justification for their use in the successful experiment of Greenbaum,<sup>13</sup> who would seem to have removed the last traces of doubt which surround the typhoid bacillus, by successfully causing in a chimpanzee typhoid fever by feeding cultures of the bacillus. And Charles Nicolle<sup>14</sup> has just announced from the Pasteur Institute at Tunis the production of lepromata in two specimens of *Macacus sinuensis* by inoculating leprosy tissue into the skin.

Metschnikoff and Roux immediately showed that the syphilitic poison was transmissible from ape to ape without undergoing alteration of quality as measured by the effects produced. Forty-five days after the appearance of the primary lesion in the first animal a second was inoculated from the first—both from the primary and the secondary papular syphilides. Lesions regarded by Fournier as syphilitic developed

<sup>12</sup> Cited by Metschnikoff.

<sup>13</sup> Comp. rend. des Séances de l'Acad. des Sciences, 1905, CXL, 539.

<sup>14</sup> Annales de l'Institut Pasteur, 1905, XVII, 1809.



from both inoculations, and they were followed by adenitis. In a later report they describe still another important experiment in the chimpanzee. Eighteen days after the appearance of a primary lesion, which was located on the eye-brow, small persistent erosions appeared on the tongue, and three weeks later still other lesions appeared there and on the lower lip. These erosions were regarded as mucous plaques. At about the same time this animal developed a paraplegia lasting more than a month, which, it is suggested, was of syphilitic origin.

Lassar's<sup>14</sup> experiments, while confirming the foregoing, extend them very little. He observed the regular development of the primary lesions, the delay in appearance of the secondary manifestations, and the transmissibility of the virus from animal to animal. He describes secondary, luetic papules on the hands and feet and about the anus, and he describes in a brief way a histological study of the experimental syphilides by Becker and Mayer,<sup>14a</sup> which bring them into agreement with the corresponding lesions in man, a conclusion to which they arrived and one which was confirmed by Arnal and Salmon,<sup>14b</sup> who studied Metschnikoff's specimens. Certain experiments which I performed upon monkeys, to which I will refer later, enabled me to make out the essential identity of the experimental and the naturally acquired primary lesions.

The studies made by Neisser<sup>15</sup> confirm and extend those just mentioned. Neisser would seem to have discovered an interesting gradation of susceptibility to syphilitic infection in the ape, depending upon the exact position held by different species in the zoological series. His conclusions are that the lower monkeys react with local syphilides, the highest monkeys, namely, the chimpanzee, gorilla and orang-utan, all react with primary and secondary lesions, while the gibbon, which occupies an intermediate position, develops less characteristic primary lesions and fails to show the typical secondary ones.

There is at least one important way in which the results of Neisser's experiments differ from those of Metschnikoff and Roux. The latter experimenters believe that they had modified and attenuated the virus by its passage through the lower monkeys so as to produce a vaccine which, when used to infect the chimpanzee, provoked a local process, and left this animal protected from the virulent human virus. Neisser, on the contrary, has inoculated successfully not only from monkey to monkey, producing the local lesions, but from monkey to anthropoid, with the production both of the local primary and the systemic secondary infection. Hence he concluded that Metschnikoff's failure was due not to protection, but to syphilization of the chimpanzee.

Doubtless the higher apes will come in time to

resolve many disputed points in human syphilis, and to supply facts where we now have opinion and conjecture. The use of these animals has already answered partially certain questions relating to the manner of entrance of the virus into the body and the comparative virulence of different products of the syphilized animal; and it may also help to explain better than we now know it the important questions of re-infection in syphilis. Cutaneous inoculations with primary syphilides and primary lymphatic glands cause lesions; subcutaneous injections of chancres and condylomata produce no specific manifestations; insertion of infected lymph glands directly in the peritoneal cavity is without effect. Defibrinated blood and blood serum from cases of recent syphilis in man are innocuous when injected subcutaneously and intraperitoneally. Blood serum from syphilitics is also without protective action against subsequent inoculation with active virus. The internal organs—spleen, liver, bone-marrow—of the recently infected monkey and ape possess neither infective nor protective properties of high degree. Perhaps they are wholly innocuous. These are some of Neisser's results, which, if not conclusive, have yet a bearing upon the relative infectiousness of the blood and internal organs of syphilitics, and bear on the questions of the avenue through which the virus seeks to enter the body, and its capacity to enter directly into the interior of the body and cause the secondary lesions of the disease, without first having undergone incubation or other changes at some local superficial site.

That the virus of syphilis when separated from the body is labile is shown by the relative infrequency of accidental infections from contaminated objects. We have no data with regard to the influence upon the virus of simple drying and exposure to the air; but these are now easily within reach. It has been ascertained by Metschnikoff and Roux<sup>16</sup> that the poison is easily injured or destroyed by low degrees of heat. Particles of chancres and condylomata suspended in salt solution, or in aqueous tumor, are rendered inactive upon the monkey and chimpanzee after heating for one hour at 51° C. and half-hour at 60° C. Glycerine,<sup>17</sup> on the other hand, does not deprive the virus of its power to set up specific lesions in apes, at least not when the inoculation is made soon after mixing.

The foregoing studies have been valuable in establishing many points regarding the pathology of syphilis, but they have thrown no light upon the nature of the micro-organism which it is hardly presumption to speak of as its immediate cause. That this micro-organism is not so peculiarly specialized as to thrive on human tissue alone is now proven, and the fact of the blood relationship of the whole group of primates receives through these studies an additional and unexpected confirmation.

<sup>14</sup> Berliner klin. Wochenschrift, 1903, XL, 1189.

<sup>14a</sup> Included in Lassar's paper.

<sup>14b</sup> Annales de l'Institut Pasteur, 1904, XXIII, 469.

<sup>15</sup> Deutsche med. Wochenschrift, 1904, XXX, 1369, 1431, and with Baermann, *idem.*, 1905, XXXI, 748.

<sup>16</sup> Annales de l'Institut Pasteur, 1904, XVIII, 657.

<sup>17</sup> Metschnikoff and Roux, *idem.*

No one doubts that the cause of syphilis is a living germ, but its elusiveness up to the present time has given rise to speculations upon its probable size. Now that we have learned that a class of micro-organisms exists which defy the highest powers of the microscope and that among this class are several species causing fatal infections in the lower animals it is pertinent to inquire whether the micro-organisms of syphilis also belong here. This question has been answered indirectly by filtration experiments carried out by Metschnikoff and Roux.<sup>18</sup> They proved that an unglazed filter, which will permit the passage of the microbe of pleuro-pneumonia of cattle, holds back the virus of syphilis; and even before this conclusive test was made Klingmüller and Baermann<sup>19</sup> had inoculated themselves unsuccessfully with filtrates obtained by the use of Berkefeld filters from active syphilitic lesions. In other words, the evidence all points to the microbe of syphilis being microscopic, not ultramicroscopic.

There has been, as you well know, no dearth of supposed discovery of the microbic cause of syphilis. It would not be profitable to make an historical and critical survey of the general literature of the subject, for all the earlier observations down to the publication of Siegel and Schaudinn and Hoffmann have either been discredited or stand upon a foundation so weak as scarcely to call for painstaking attempts at confirmation. The very far-reaching results of Siegel's<sup>20</sup> studies, embracing, as they do, besides syphilis, smallpox, scarlet fever and foot and mouth disease, have not yet received the attention which they possibly deserve by reason of the faith which F. E. Schultze<sup>21</sup> has expressed in them. It is, however, interesting to learn that the discovery of *Spirocheta pallida* is the direct outcome of an attempt on the part of Schaudinn and Hoffmann to confirm Siegel's observations on the so-called protozoon, *Cytorrhynchus luis*, which he described as existing in the blood and tissues of syphilitic patients, and in rabbits inoculated with the blood and other products obtained from them.

In view of the late developments on this subject it will not be uninteresting to quote from the last paper of Metschnikoff and Roux<sup>22</sup> and to give their views upon the nature of the syphilis microbe. Their words show that they looked for the very form of organism that was afterwards found. They say: "The microscopical researches which we have made have not yielded us satisfactory results. A minute examination of the serous fluid obtained from initial vesicles revealed the presence of leucocytes and red blood

corpuscles, but no microbes. The minute granules in the fluid—cell fragments, doubtless—do not execute any movements attributable to shock from a motile organism. If the parasite of syphilis were a *spirillum* much smaller than that of Obermeier or the spirillum of birds, one should have been able to detect its presence by the movements imparted to the corpuscles suspended in the serous fluid. The absence of this movement makes us suppose rather that the organism is immobile. Moreover, the addition of neutral red to the serum, which, in the case of the spirillum of birds, makes it at once apparent, accomplishes nothing in the study of the microbe of syphilis."

It is more than noteworthy that within six months of the appearance of this utterance a spiral organism should have been discovered in syphilis, and before the lapse of another half-year been established as not impossibly the cause of the disease. There is, however, more or less of justification to be found for the view expressed by Metschnikoff and Roux for the spirochæta of Schaudinn and Hoffmann<sup>23</sup> is not actively mobile, and its extreme tenuity and refractoriness to staining agents renders it difficult to see, both in the stained and unstained conditions.

In order that one may fix accurately the historical position of the spiral organism of Schaudinn and at the same time be informed of the degree of prescience contained in Metschnikoff and Roux's conjecture, it may be stated that as early as 1903 Bordet and Gengou<sup>24</sup> observed very fine spiral organisms in the interior of a chancre and in a mucous patch. Doubtless these spirals were identical with the so-called *Spirochæta pallida*; but as subsequent examinations did not yield these investigators the same parasite they ceased to regard it as important. That this observation was familiar to the staff of the Pasteur Institute is certain, and the recent history of the spiral organism occurring in syphilis also suffices to explain Bordet's failure to demonstrate it constantly in the lesions.

The flood of confirmatory publications upon the discovery of Schaudinn and Hoffmann has created a feeling of faith in the spirochæta which its discoverers have never publicly expressed.<sup>24a</sup> It will be our task at this time to pass in review the evidence upon which this faith is based in order that we, too, may appreciate the force and the direction of the currents.

*Spirochæta pallida* is described by its discoverers as measuring from 4 to 10 microns, the

<sup>18</sup> Ibid. See also Siebert (Deutsche med. Wochenschrift, 1905, p. 1642).

<sup>19</sup> Deutsche med. Wochenschrift, 1904, XXX, 766.

<sup>20</sup> Untersuch. über die Aetiologie des Syphilis, Anhang zu den Abhandlungen der königl. preuss. Akademie der Wissenschaften vom Jahre 1905; Untersuch. über die Aetiologie der Pocken und der Maul- und Klauenseuche, idem.; Untersuchungen über die Aetiologie des Scharlachs, idem. Also in Münch. med. Wochenschrift, 1905, LII, 1323, 1384, 1574; Medizin. Klinik, 1905, I, 446. See also Freund, Münch. med. Wochenschrift, 1905, LII, 1819.

<sup>21</sup> Berlin. klin. Wochenschrift, 1905, XLII, 653.

<sup>22</sup> Annales de l'Institut Pasteur, 1904, XVIII, 661.

<sup>23</sup> Vorläufige Berichte über das Vorkommen von Spirochæten in syphilitischen Krankheitsproducten und Papillomen. Arbeiten a. d. kais. Gesundheitsamte, 1905, XXII, 526; Deutsche med. Wochenschrift, 1905, XXXI, 711; Berliner klin. Wochenschrift, 1905, XLII, 673. Also, Hoffmann, Berliner klin. Wochenschrift, 1905, XLII, 726 and 1025; Schaudinn, idem., p. 733.

<sup>24</sup> Metschnikoff and Roux, Bull. de l'Académie de Méd., 1905, LIII, 468; and Bordet, Soc. roy. des Sciences Méd. et Nat. de Bruxelles, 1905, LXIII, 124.

<sup>24a</sup> In papers which appeared after the reading of this address Hoffmann (Deutsche med. Wochenschrift, 1905, p. 1455) and Schaudinn (idem., p. 1665) state it as their conviction that the *pallida* is the definitive cause of syphilis. Metschnikoff (Bull. de l'Institut Pasteur, 1905, III, 544) expresses confidence in the discovery, and views syphilis as a chronic spirillar infection.



average length being 7 microns, or about that of a red corpuscle of man. In width it varies from unmeasurable thinness to  $\frac{1}{2}$  micron. It possesses from 3 to 12, sometimes more, curves, which are sharp and regular and resemble the curves of a corkscrew. The poles are sharpened. The organism is mobile and the motions consist of rotations on the long axis, forward and backward movements, and bending of the entire body. Flagella have not been seen.<sup>24b</sup>

The character of the curves and the tenuous forms give a striking appearance to the organism, and make its identification relatively easy. As it is frequently the only spiral organism present in the preparation, there is, as a rule, no difficulty surrounding its identification. But its detection is not entirely easy, since with most stains recommended for its demonstration it is tinged so lightly that some practice is required in order to see it. Its admixture on the ulcerating surfaces of syphilides with other spiral organisms, not limited to specific lesions, but occurring in ulcers of various kinds, adds somewhat to the difficulties of its detection. The most trustworthy evidence points to the fact that in the interior of specific lesions this pale spiral organism is rarely attended by the coarser kinds of spirilla or with extraneous bacteria; and, therefore, the fluids obtained from the interior of the syphilides are the most favorable for purposes of examination. Several writers have stated that the pallida may be entirely missed among the saprophytes of the surface of ulcerating lesions under conditions in which it is easily detected in the deeper parts. My own study of ulcerating primary lesions, condylomata and mucous patches, has led me to similar conclusions. There is, I think, no doubt that the pallida occurs on the surface of these lesions, but evidently its growth is more restricted than in the absence of contending saprophytic, pyogenic and putrefactive micro-organisms. The pallida would seem, therefore, not to thrive as well on dead as on living tissue, a consideration which is not insignificant in view of the growing belief in its peculiar pathogenic and highly parasitic properties.

Foreign and distinct spiral organisms occur not infrequently in health about the genitals, and probably in other parts of the surface of the body, and these kinds may therefore become associated in specific lesions with the pallida. The chief foreign spiral organism of this class is a coarser spirillum with fewer curves of wider and less sharp contour. It has been described several times, especially in inflammatory venereal processes, by Berdal and Bataille, Csillag and Rona;<sup>25</sup> and Schaudinn and Hoffmann have pro-

<sup>24b</sup> This statement requires modification since Schaudinn (Deutsche med. Wochenschrift, 1905, p. 1665) demonstrated by means of Loeffler's stain flagella upon the pallida. The coarser and certain finer indeterminate spirochæte, when stained in this manner, gave evidences of undulating membrane, but not of flagella. Herxheimer and Löser (Münch. med. Wochenschrift, 1905, p. 2212) also give figures of the flagellated pallida which they obtained by the use of the ordinary dyes, apparently anticipating Schaudinn's finding.

<sup>25</sup> Quoted by Schaudinn and Hoffmann. Arbeiten aus dem kaiserlichen Gesundheitsamte.

posed tentatively for it the name of *Spirochæta refringens*. It appears to be a common and widespread saprophyte.

A few of the more recent writers have described among the paler and more delicate spirals certain forms in which the curves are longer and a part of the rod is straight. These they consider as possible transitions between pallida and refringens. Although my study has not been exhaustive, I may mention that I have not observed such transitions in the syphilitic material which I have studied, and the impression I have gained is that these two types are quite distinct.

There is, however, evidence at hand, to which I will refer more in detail later, that the pallida type may be simulated more or less closely by spiral micro-organisms occurring in other pathological conditions than syphilis. Everyone knows the dangers and difficulties which attend every attempt at classification of these minute organisms upon morphological and staining characters chiefly. But until a method of cultivation is found, and we are without one at present, we must rely as best we can upon superficial character. I am convinced that the morphological characters of the pallida are sufficient to identify it in specimens made from specific lesions; but I should not be surprised were it found that similar morphological forms occur in nature among the saprophytic micro-organisms.

Since it will be an impossible undertaking to review even most briefly the separate papers which have appeared on the *Spirochæta pallida*, I will endeavor to give you the spirit of the studies already published, as I understand it. The lesions which have been studied chiefly are those which appear on the surface of the skin and mucous membranes, but, nevertheless, a small number of observations have been made on the blood and deep organs, while a fairly large number have been carried out with material obtained from the superficial lymphatic glands.

The evidence is conclusive that primary lesions—condylomata, papular, macular and pustular superficial lesions—contain the pallida either constantly or in the majority of cases. The later papers record fewer failures in finding the organism in chancre, condylomata and mucous patches than the earlier ones; and I think there can be no doubt that this greater constancy is to be attributed to increased experience in the observers, and to improved methods of staining the organism. There is something elusive and mysterious in the varying capacity for taking up stains exhibited by the pallida. My first successful preparation was obtained with an ordinary gentian-violet dye; but I failed with this same stain in many subsequent trials. Azur still remains, I think, the most reliable stain, although several of the more rapid methods, in particular that of Proca and Vasilescu, are also useful.

Since the choice of material will affect essentially the result of examination, I may be permitted to say a word upon this subject. If it is

desired to study ulcerative lesions the surface should first be cleansed, after which the raw surface exposed need only be gently rubbed with a platinum loop in order to obtain a few drops of serum. The cover glasses should be spread as thinly as possible, which is the rule for all these examinations. Should ulcerations of the superficial syphilide not have taken place a few drops of fluid—a mixture of blood and lymph—can be withdrawn with a hypodermic syringe. In the case of mucous patches I have preferred to use the double sharp spoon, removing with one the superficial necrotic tissue and saprophytic organisms, and with the other scraping lightly the denuded surface. This operation is quite painless, but there is no disadvantage in previous cocaineization of the surface if it is desired. I have compared the two scrapings, always to the advantage of the deeper one, in which, greatly to my surprise, I often found, except for the pale spiral, almost complete absence of micro-organisms. These ulcerated papules of the mucous membrane of the mouth and throat would seem, from my experience and from reported examinations, to contain the spirochæta in good numbers, and hence to be particularly suitable for demonstrating the organism. I have found no difficulty in distinguishing in these preparations from the buccal cavity the pallida, and I have not been disturbed or put in doubt by any appearance of transition to the common spiral organisms of the mouth. For much of the material studied I must thank the kindness and courtesy of the staff of the City Hospital.

Through the kindness of Dr. Pedersen, of the House of Relief, I was able to secure early in my studies several excised chancres and condylomata. These served not only to supply me with favorable specimens for demonstrating the pallida, but they enabled me to compare the findings from the superficial and deeper layers of the same specimens, which I did to the advantage of the latter.

The skin lesions—papules, pustules and roseolous areas—are often rich in the organism. After cleaning the surface a superficial incision with a scalpel or sharp needle is made, and a drop or two of blood and lymph expressed.

The superficiality of the three classes of lesion described make them easily accessible for diagnostic purposes. I assume that should the *Spirochæta pallida* be established as the cause of syphilis, for which I may add I think the evidence still inadequate, its presence will be sought systematically to confirm or prove the diagnosis. I am unable, from my lack of clinical experience, to discuss the question of the probable advantage to the patient in doubtful cases which might accrue from an earlier diagnosis and more prompt treatment. It seems to me not improbable that valuable time may not only be saved in this way, but possibly some of the distressing and disfiguring stigmata of the disease might be avoided.

I was able recently to try the value of this theoretical diagnostic test. The case was that of a respectable woman (Abbott) forty years old, who presented herself because of an eruption on the face which spread to the shoulders and slightly to the abdomen and back. She denied stoutly exposure to infection with syphilis; and as the eruption, although a rosy-macula, was not unmistakably characteristic, she was being observed prior to the institution of treatment. The examination of blood taken from a slightly raised spot on the back gave a fair number of the pale spiral organisms. Of course, no practical significance can at present be attached to this observation.

The spirochæta have been demonstrated less uniformly in the deeper organs. The locally enlarged lymphatic glands, those of the groin chiefly, which show early involvement in syphilis, were naturally studied immediately. The result of this study has been to furnish a positive answer as regards their presence; but while Hoffmann has succeeded practically constantly in staining the organism in aspirated gland juice, others have been less successful. My own experience taught me that the spirochæta occurs in gland juice; but that long search may be required to discover it. I have always endeavored before staining to obtain aspirated fluid which contained masses of gland cells, since the blood alone is not likely to yield the organisms. By using a needle of good caliber and moving it slightly to and fro in the massaged gland, an operation which, once the skin is punctured, appears to be nearly painless, and using a syringe of 5 to 10 cubic centimeters' capacity, so as to secure strong suction, a few drops of blood-stained gland juice can be obtained. This may, as Hoffmann<sup>26</sup> suggests, be ejected into a porcelain dish or capsule, preferably at two or three points, and the small whitish, rather than the reddish drops, chosen for examination, since they will contain the gland tissue in greatest amounts. I think any dilution of this fluid objectionable. Thin spreads on cover glasses of the pure fluid should be made. I was obliged in some instances to dilute this fluid with salt solution in order that it might be used for some attempts at cultivation of the organism. These cover-glasses were not satisfactory.

It is too early to pass upon the value of negative examinations, but one experience which I had at first troubled me and then taught me a great deal.<sup>27</sup> It showed me the value—in this instance the invaluableness—of tenacity. A young man of eighteen (Case IV) acquired a venereal infection in January. I saw him in May at the House of Relief. The primary lesion, excised by Dr. Pedersen, showed the pallida. I aspirated an enlarged inguinal gland and studied the specimen in the fresh state and discovered what I took to be several small and one large

<sup>26</sup> Berliner klin. Wochenschrift, 1905, XLII, 1022.

<sup>27</sup> Flexner and Noguchi, THE MEDICAL NEWS, 1905, LXXXVI, 1145.



faintly motile spiral organism. I could not be certain of my observation as the organisms were very difficult to resolve satisfactorily. I was therefore not greatly surprised to find no spirals in the stained preparations, and I was led to suspect that I had been deceived by the first examination. Later, however, after a more searching study of the stained specimens, I discovered a small number of the pallida.

The finding of the pallida in the regional lymphatic glands is, of course, imperative if the organism is to have any position as the probable cause of syphilis. My experience, which has not been large, has not suggested that the enlarged inguinal lymphatic glands contain an indiscriminate mixture of organisms. I have not found such mixtures in cover-glasses, and they have not developed in cultures made from gland juice. The question now arises as to whether this organism also invades the deeper parts of the body. Can it be found in the spleen, etc., and does it inhabit the circulating blood? Our knowledge upon this topic is still highly defective. Schaudinn found the organism once in aspirated splenic juice from a case of recently acquired syphilis; Hoffmann has obtained it from the aspirated juice of an enlarged submental gland in a case in which a chancre of the lip existed, which is, of course, equivalent to the findings in the glands of the groin. The circulating blood has been studied by several investigators, but with a very small number of successful findings. Reckzet<sup>28</sup> was the first to report the pallida in the blood, but the forms which he saw were not typical, and he regarded them as degenerating spirals. Raubitschek<sup>29</sup> reports a positive finding in a woman who dated the infection three months before the examination. Perhaps the most convincing results were obtained by Noeggerath and Staehlin<sup>30</sup> with centrifugalized blood diluted 1 to 10 with 0.3 per cent acetic acid. They employed 1 cubic centimeter of blood for the test, and report three successful observations. Sobernheim and Tomaszewski<sup>31</sup> examined several specimens by this method, and failed in all but one.

I have studied the blood from two cases: the Abbott woman and a man in whom a macular rash had only just appeared, the primary infection having exhibited itself six weeks before. The blood in the first instance was taken from the lobe of the ear, and in the second from the median basilic vein. In neither were organisms found in the centrifugalized specimen. It is, perhaps, not necessary to state that precaution must be exercised in selecting a part of the skin which is free from the localized lesions of the disease from which to obtain the general blood. I may be permitted to refer in this place to a recent demon-

stration of the spirochætae in the skin lesions of varicelliform syphilis by Hoffman.<sup>32</sup>

A review of the facts which have now been brought to your attention leads to the statement that a particular and apparently peculiar spiral micro-organism has been found with striking constancy in the primary and secondary focal lesions of acquired syphilis, whether the lesions are situated on the surface or imbedded beneath the skin of the body. This review also tends to show that this organism does not exist in large numbers in, and possibly is only an occasional and accidental inhabitant of, the general blood stream in the disease, which fact is in striking conformity with Neisser's experiments on the non-infectivity of the blood of syphilitics for monkeys.<sup>32a</sup> There is, however, abundant evidence of the distribution of this micro-organism by the general circulation, from which it would appear to be taken out by the blood-vessels of the skin and mucous membranes, and possibly the internal organs.

Whether the spirochætae remain in the vessels of the skin or whether they quickly pass into the surrounding lymphatics is not known. It seems, however, for the moment permissible to assume that the inflammatory and productive lesions are associated with, perhaps caused by, this localization; although it must for the time being remain unsettled whether the direct causes of the local reaction are vascular emboli or perivascular infections.

This doubt will in all probability remain until by histological methods we are able to stain the organism in the tissues. But I have endeavored to procure a tentative answer to this question in another manner, namely, by producing rapid vesication with ammonia water and studying the serous fluid. Since the vesicles arise in a few minutes and the fluid is free of blood corpuscles, I thought it possible that any spirochætae which were lying about the vessels in the tissue spaces might be washed into the vesicle. A study of vesicles produced in three subjects of the skin lesions of early syphilis were, however, all negative. On the other hand, it appears from tests made later by Levaditi and Petresco<sup>33</sup> that a more severe vesication is accompanied by the escape of spirochætae in the vesicular fluid. The vesicant was kept applied by him for eight hours, after which time many organisms were found to have passed out. He found the largest number in vesicles directly over papular syphilides, a smaller number in the skin immediately surrounding the lesions, and none in the distant healthy skin. Since in vesicles many hours old cellular exudation has taken place it may be assumed that the injury to the blood-vessels is greater than occurs with the rapidly acting ammonia; and hence it is possible that the previous vessels permit the es-

<sup>28</sup> Cited by Hoffmann, *Berliner klin. Wochenschrift*, 1905, XLII, 1022.

<sup>29</sup> *Wiener klin. Wochenschrift*, 1905, XVIII, 752.

<sup>30</sup> *Münch. med. Wochenschrift*, 1905, LII, 1461.

<sup>31</sup> *Idem.*, p. 1857. See also Hoffmann, *Deutsche med. Woch.*, 1905, p. 1710.

<sup>32</sup> *Berliner klin. Wochenschrift*, 1905, XLII, 1022.

<sup>32a</sup> In a recent communication Hoffmann (*Berliner klin. Wochenschrift*, 1905, p. 1450) reports a successful inoculation of syphilis in a macacus rhesus, with the circulating blood from a man who acquired the disease six months previously and was untreated. The experimental lesion showed many pallida.

<sup>33</sup> *La Presse Médicale*, 1905, No. 78, p. 617.

cape with the serum and cells of some of the micro-organisms which they may contain. This method of Levaditi has, however, the advantage of furnishing a fluid rich relatively in spirochætae for diagnostic purposes.

Before the employment of bovine virus was as general as it now is syphilis was occasionally transmitted by vaccination. While this danger has been eliminated by the substitution of bovine for human virus, it would be of interest to determine whether the pallida exists in vaccine pustules in syphilitic subjects, since its detection there would not be without theoretical significance. I have looked for the pallida in vaccination lesions in two syphilitic persons thus far without success. The cases were perhaps not especially favorable, for in one the crust was dry and almost ready to come away, and in the other the vesicle was partly dried and contained thick purulent exudate unfavorable for study. I mean to pursue this investigation farther as soon as a favorable opportunity offers.

The great length of time during which the micro-organism of syphilis must, under some conditions, endure in a living state in the body, constitutes a fact of high importance in the history of the recurrences and the congenital transmission of the disease. Hence the question arises whether there is reason to believe that congenital syphilitic manifestations are associated with the occurrence of the pallida, whether the number and distribution of this organism are such as to explain the lesions and the infectiousness of this disease, and whether the spirochæta exists equally in those cases of congenital syphilis which are the offspring of a parent suffering with florid syphilis, and of another in whom the disease has not manifested itself for many years. We are, fortunately, in a position to state that the evidence at hand indicates that the spirochæta survives in the body for many years and is transmissible by a parent herself free from the usual signs of the disease. I can best support this statement by citing one or two illustrative examples:

The first will show that the pallida appears in the late secondary lesions, although several years have elapsed since infection. Sobernheim and Tomaszewski<sup>34</sup> report three cases of syphilis in which infection occurred in 1898, 1900 and 1901, respectively. In the three recurrent secondary lesions reappeared recently, chiefly on the face—nose, lip and eye. In one of the cases an ulcerating condyloma alone was present. The pallida was found in the ulcers in all the cases. The number of the organisms was not large; and it would therefore seem that in these cases the multiplication is, perhaps, restricted, as we either know or suppose to be true of certain bacterial infections, for example, the persistent infection of cartilage and gall-bladder following typhoid fever. If this view is true, then the immature tissues of fetuses and young infants must be far more favorable to free and unrestricted develop-

ments of the pallida. The literature already contains the records of a sufficient number of examinations of infants, the subjects of congenital syphilis, to show that the pallida regularly occurs in the disease. This micro-organism has been detected in the lesions of the skin and internal organs, sometimes in large, sometimes in small numbers. In several cases studied after death a general infection with the pallida could be demonstrated.

My own experience is based upon the study of two congenitally syphilitic children, for which opportunities I have to thank Dr. Cragin and his resident, Dr. Ryder, of the Sloane Hospital. The first was a living child, presenting a roseolous and papular rash. A few drops of blood were expressed from an incised macule of the foot; it was very rich in spirochætae. The history of this child bears upon the questions suggested above—the persistence of the organism in a viable state in the body through a number of years, and its freer growth in infantile tissues. The mother was thirty years old and had borne three children. The first, born nine years before, is healthy and now living. She believes that eight years ago she contracted syphilis from her first husband; she had a roseolous rash and was treated for a short time. Five years ago she miscarried. She remarried a year ago, and at present she is free from visible signs of syphilis. The father is believed to be free of the disease. This case presents nothing very unusual in the lapse of several years between the time of infection of the patient and transmission to the offspring; but in view of the subject-matter before us it assumes an especial importance as bearing on the etiological position of *Spirochæta pallida*. The placenta of this child was also examined, and after long search a single pale, spiral organism was found.

The second child of my study was born prematurely to a mother showing unmistakable signs of syphilis; it lived three-quarters of an hour. There were marked syphilitic visceral and skin lesions. The pallida was found quite numerous in the skin, but it was found in very small numbers and only after long search in the liver. The bile, it may be mentioned, showed the organism in small numbers.

That congenitally syphilitic children are capable by suckling of infecting with syphilis healthy persons is, of course, established, and it is in conformity with this fact that Babes and Panea<sup>35</sup> could demonstrate the pallida in the pharyngeal secretions of a congenitally syphilitic child. They also found them, I may remark, in the conjunctival secretion.

So far, therefore, as a study of congenital syphilitic lesions can serve to confirm and establish spirochætae pallida as the cause of syphilis, this has been done in part. Doubtless many more examinations will be made, through which important data—whether pointing one way or the

<sup>34</sup> Loc. cit.

<sup>35</sup> Berliner klin. Wochenschrift, 1905, XLII, 865.



other—will be accumulated. Perhaps these data will serve to bear upon the question, still perhaps not wholly settled, whether the placental circulation is or is not previous to syphilitic virus, and thus to shed an illuminating light upon those cases in which the child has presumably become infected from a post-conceptional infection in the mother; and, now that we are indulging our hopes, some light may be thrown upon that remarkable condition of supposed immunity, or of cryptic infection, which is embraced in Colles' law.

It may perhaps be objected that in this presentation I have appeared to assume that *Spirochæta pallida* is the cause of syphilis, and that I have made this idea agree with certain facts of syphilitic phenomena. I should deplore having produced this impression; for while I have as a part of my theme considered the relation of the pallida to syphilis, I am still far from having myself a conviction of its position as immediate cause of that disease, for the establishment of which casual relation more stringent proof than yet produced will be required.

No consideration of the etiology of syphilis would be complete without reference to the late or tertiary lesions of the disease. So far as our present purpose is concerned the subject of these supposedly non-infective lesions can be dismissed with a sentence: A small number of gummata and other tertiary syphilides have been studied for the pallida with almost constant negative results. The exceptions to this rule must, I think, for the present be viewed with suspicion. No account can, of course, be taken in this connection of the study of gummata occurring in congenital syphilis, because of their close association with secondary lesions.<sup>35a</sup>

However these findings in tertiary lesions may impress you they can hardly bear very finally upon the question of etiology. There is, however, another set of observations which may have greater significance. I refer to the finding of the pallida in experimental primary syphilides in monkeys. I have had three successful inoculations of syphilitic virus upon two macac species of monkey—the rhesus and cynomolgus. I speak of these first, since the inoculations were made with the view of testing the question of the transmission of the pallida before—some time before—the announcement by Schaudinn that Metschnikoff had demonstrated the spirochæta in a non-ulcerated lesion in this species, which was already developed at the time of the announcement of the discovery of the pallida. Thus far only one of my series has been fully studied for the pallida, which were found present in small numbers. Kraus,<sup>36</sup> of Vienna, has since followed the pal-

lida through two monkeys, the second animal having been successfully inoculated with the virus of the first.

I have already carried you so far that I hesitate even to allude to another topic; and yet I cannot close this address without stating that although many negative control examinations have been made upon healthy persons and with divers pathological products, one or two writers<sup>37</sup> have claimed to find the pallida type of spiral in ulcerated tumors and in a non-syphilitic papilloma.<sup>37a</sup> The question of similarity of species found in these growths with the pallida is a disputed one, upon which I shall not enter. The means at our command at present, upon which to base a classification, are too few and inadequate to settle so important a discussion. It may, however, be remarked that there will doubtless be described among the host of spiral micro-organisms that must exist in nature, forms which approach more or less closely to the pallida type. But until cultivations can be secured and experimental inoculations tested we shall have to content ourselves with such considerations as those of morphology, staining reactions and relation to specific lesions, upon which data we must base our faith or disbelief that a great and epoch-making discovery has been made.

#### BIBLIOGRAPHY.

- This list includes a large part of the papers which have appeared on the *Spirochæta pallida*, but it does not include those cited in the body of the lecture.
- Bandi and Simonelli: Ueber die Anwesenheit der *Spirochæta pallida* in sekundär-syphilitischen Manifestationen und über die zu ihren Nachweis angewendeten Färbungsmethoden. Münch. med. Wochenschrift, 1905, LII, 1668.
- Sulla presenza dello *Spirochæta pallida* nel sangue e nelle manifestazioni secondarie di sifilide. La Riforma medica, 1905, XXI, 791.
- Buschke and Fischer: Ueber das Vorkommen von Spirochæten in inneren Organen eines syphilitischen Kindes. Deutsche med. Wochenschrift, 1905, XXXI, 791. Nachtrag, 839.
- Buschke: Ueber Spirochætenbefunde bei Syphilis. Berl. klin. Wochenschrift, 1905, XLII, 731.
- Davidson: Spirochætenfärbung mit Kresylviolett. Berl. klin. Wochenschrift, 1905, XLII, 984.
- Dudgeon: The Staining Reactions of the *Spirochæta pallida* in Syphilis. Lancet, 1905, p. 522.
- Ehrmann: Diskussion. Wiener klin. Wochenschrift, 1905, XVIII, 593.
- Fabry: Spirochæten bei Syphilis. Deutsche med. Wochenschrift, 1905, XXX, 1469.
- Fraenkel: Ueber das Vorkommen der *Spirochæta pallida* bei Syphilis. Münch. med. Wochenschrift, 1905, LII, 1139.
- Giemsa: Bemerkungen zur Färbung der *Spirochæta pallida* (Schaudinn). Deutsche med. Wochenschrift, 1905, XXXI, 1056.
- Herxheimer and Hübner: Ueber Darstellungsweise und Befund der bei Lues vorkommenden *Spirochæta pallida*. Idem., p. 1023.
- Herxheimer: Münch. med. Wochenschrift, 1905, p. 1861.
- Jacquet and Sevin: Recherches sur la spirille de Schaudinn dans les accidents tertiaires. Bull. Soc. méd. des hôp. de Paris, 1905, p. 420.
- Kraus, R.: Ueber die ätiologische Bedeutung der *Spirochæta pallida*. Wiener klin. Wochenschrift, 1905, XLVII, 502.
- Lehmann: Die neueste Forschung über Infektionskrankheiten. Münch. med. Wochenschrift, 1905, p. 1171.
- Lesser: Demonstration. Med. Klinik, 1905, I, 717.
- Levaditi: Syphilis congenitale et *Spirochæta pallida* (Schaudinn). C. R. Soc. Biologie, 1905, LVIII, 845. La Presse médicale, 1905, p. 337. La syphilis, 1905, III, 526.
- Levy-Bing: Des moyens de coloration des *Spirochæta pallida*. La Bulletin médical, 1905, XIX, 572.
- Recherches des *Spirochæta pallida* dans le sang des syphilitiques. Idem., p. 605.
- Action du mercure sur la spirochæte en général et sur la pallida en particulier. Idem., p. 631.
- 37 Thesing. Berliner klin. Wochenschrift, 1905, XLII, 722; Münchener med. Woch., 1905, LII, 1337. Kiolemenoglou and V. Cube, idem., p. 1275. Hoffmann, Berliner klin. Woch., 1905, XLII, 880 and 1022. Bonhoff, idem., p. 1142. Borrell, Comp. rend. Soc. de Biologie, 1905, LVIII, 770. Moritz, Deutscher Archiv für klin. Medizin, 1905, LXXXIV, 459.
- 37a Of especial interest are the reports of Castellani (British Medical Journal, 1905, p. 1330) on parangi (yaws) in the lesions of which a spiral organism, bearing close superficial relationship to the pallida, has been found by him.

<sup>35a</sup> Schaudinn (Deutsche med. Wochenschrift, 1905, p. 1665) thinks it probable that the pallida may occur in the late lesions in a resting form of different appearance than the usual spiral form. Finger and Landsteiner (Sitzungsberichte der k. k. Akad. der Wissenschaft in Wien, CXIV, Abt. III, June, 1905) reported a successful transmission of syphilis to the monkey by means of inoculation of a large amount of gummatous material.

<sup>36</sup> Sonderabdruck a. d. akadem. Anzeiger, k. k. Akad. d. Wissenschaften in Wien, No. XVII. Ref. in Wiener klin. Wochenschrift, 1905, XVIII, 829; also with Frantschoff, idem., p. 942. Metschnikoff, Bull. de l'Institut Pasteur, 1905, III, 540.

- Munzer: Ueber das Vorkommen von Spirochäten bei syphilitischen und anderen Krankheitsprodukten. Berliner klin. Wochenschrift, 1905, p. 1144.
- McWeeney: Spirocheta in Syphilis. British Med. Journal, 1905, p. 2319.
- Nigris: *Spirocheta pallida* and *refringens* nebeneinander im Blute bei hereditärer Lues. Deutsche med. Wochenschrift, 1905, p. 1431.
- Nobecourts, Levaditi and Darré: Syphilis congenitale et *Spirocheta pallida* (Schaudinn). C. R. Soc. Biol., 1905, LVIII, 1021.
- Oppenheim. Diskussion. Wiener klin. Wochenschrift, 1905, p. 594.
- Oppenheim und Sachs: Eine einfache und schnelle Methode zur Darstellung der *Spirocheta pallida*. Deutsche med. Wochenschrift, 1905, p. 1156.
- Paltauf: Diskussion. Wiener klin. Wochenschrift, 1905, p. 593.
- Paschen: Demonstration. Münch. med. Wochenschrift, 1905, p. 932.
- Pielicke: Diskussion. Berliner klin. Wochenschrift, 1905, p. 731.
- Ploeger: Die Spirochäten bei Syphilis. Münch. med. Wochenschrift, 1905, LII, 1381.
- Proca and Vasile-cu C. R. d. Soc. Biol., 1905, LVIII, 1044.
- Queyrat and Joltrain: Recherches des *Spirocheta pallida* de Schaudinn dans les échantillons syphilitiques. Bull. des hôp. de Paris, 1905, XXII, 559.
- Rille: Ueber Spirochätenbefunde bei Syphilis. Münch. med. Wochenschrift, 1905, p. 1377.
- Rille und Vockerodt: Idem., p. 1620.
- Reischauer: Ein weiterer Spirochätenbefund bei hereditärer Lues. Deutsche med. Wochenschrift, 1905, p. 1350.
- Reitmann: Zur Färbung der *Spirocheta pallida* (Schaudinn). Idem., p. 997.
- Salmon: Présence des *Spirocheta pallida* chez en enfants syphilitique héréditaire. C. R. Soc. Biol., 1905, LVIII, 883.
- Sabolotny und Tschlenow: Spirocheta in Syphilis. Russky Wratch, 1905, 23 and 24. Reviewed, Münch. med. Wochenschrift, 1905, No. 35.
- Scholtz: Ueber den Spirochätennachweis bei Syphilis. Deutsche med. Wochenschrift, 1905, p. 1467.
- Spitzer: Ueber Spirochätenbefunde in syphilitischen Geweben. Wiener klin. Wochenschrift, 1905, p. 822.
- Volk: Diskussion. Idem., p. 593.
- Vuillemin: Sur le dénomination de l'agent présumé de la syphilis. C. R. Acad. Science, 1905, CXL, 1567. Semaine médicale, 1905, p. 284.
- Wechselmann and Loewenthal: Untersuchungen der Schaudinn-Hoffmannschen Spirochätenbefunde in syphilitischen Krankheitsprodukten. Mediz. Klinik, 1905, I, p. 657.
- Walters: Ueber die bei Syphilis gefundenen Spirochäten. Ibid., p. 963.

### A PLEA FOR THE MORE CAREFUL EXAMINATION OF DISEASES OF WOMEN BY THE GENERAL PRACTITIONER.

BY WILLIAM EDGAR DARNALL, A.M., M.D.,  
OF ATLANTIC CITY, N. J.

THE average general practitioner of medicine, unless he has leanings toward gynecology, either does not realize the importance of a thorough and painstaking investigation of pelvic diseases in women or else often wilfully slights them. It is the object of this paper to emphasize the need of a more thorough consideration of the woman and what ails her when she comes to her medical adviser with a long category of her multitudinous complaints. Unless the case is a clear and straight one of something else, the woman's pelvic organs must always be considered. Most of the ill feelings of a woman center about her pelvis. If these organs are perfect in their function and development she is usually happy and well; if there is disorder of any kind, she is miserable and sick all over, and scarcely knows what is the matter with her. She feels so badly that she goes to her physician whom she trusts and lays the case before him. Does he prove himself worthy of the trust reposed in him by carefully examining every part of her physique until he finds out the trouble, root and branch, and the acting focus of her complaints? Oftentimes he does not consider her pelvic organs at all; she is only one of the hosts of nervous complaining women. Some-

times he is convinced that she may have some "womb trouble," but does not think it necessary to make an examination, which is the only way to find out what "womb trouble" she really has. In many cases, if he is busy he dismisses her with a prescription for her most troublesome symptom, and really makes no diagnosis at all. Nerve tonics, hypnotics, sedatives, narcotics, migraine pills, indigestion remedies and many other things are the stock in trade for this symptom doctor. As long as the medicine is taken pain may be dulled and some alleviation of symptoms may take place, but no permanent good is accomplished, and the symptoms all come trooping back when the medicine gives out. The doctor is in too big a hurry, too busy, or too lazy to make a diagnosis by carefully examining his patient; or in some cases is incompetent to do so. The patient goes on suffering week after week, and year after year, loses all faith in the medical profession, and after arriving at a state of chronic invalidism seeks the quack with the latest fad, or lands in the office of a gynecologist who is interested enough in her case to investigate it and find out the real cause of her sufferings. It may then be discovered that what might at first have been easily righted by the proper measures has now assumed such serious proportions that the patient must be subjected to a serious operation, and often one attended with even the risk of life, whereas if treatment had been instituted in time much simpler measures would have been necessary.

There is nothing more common in the daily life of any physician than that group of symptoms from which women suffer and which indicates reflex irritation from disordered pelvic organs. It is beyond comprehension how these cases, instead of being investigated by a thorough examination and the cause of the trouble traced to its true source, are treated and drugged for everything else in the category of disease but the right thing, which is often overlooked altogether. They are frequently anemic, suffer with neuralgia and fugitive pains all over the body, have insomnia, loss of appetite, indigestion. They are nervous, restless, melancholic, hysterical, subject to fainting fits, prone to emotional attacks and lose interest in their surroundings; they have hot and cold flushes, cold extremities, bladder and rectal troubles; their eyes hurt, head aches, limbs and backs aché and the whole world is out of joint for them.

They are treated for stomach troubles when they have none; liver complaints, kidney diseases, lithemia, rheumatism, constipation, neurasthenia, hysteria, and a host of other things too numerous to mention. Many a neurasthenic and hysteric patient would reveal the true cause of her nervous condition if the pelvis were investigated, and these cases should always be examined unless pelvic disease can be absolutely eliminated.

Whenever a patient comes complaining of these varied and more or less indefinite symptoms.



especially if they are associated with pains in the back low down and across the hips and with vertical headaches, no time should be lost in attempting to treat or relieve symptoms, but a careful and systematic examination should be made of the pelvis. If no cause can be found there for the symptoms, the whole body should be gone over, until the cause is found. Usually, however, the trouble will be found in the presence of congested pelvic organs, endometritis, ovaritis, flexions, versions or prolapse of the uterus or ovaries, cervical erosions and lacerations, perineal tears with relaxed vaginal outlet, or, it may be, ovarian, tubal or uterine tumors of more or less consequence. All of these troubles should receive prompt and intelligent treatment, for by the neglect of even the least of them further disorder and more serious conditions are invited and they usually accept the invitation. If neoplasms of the uterus are found, diseased ovaries, pus tubes, pelvic abscesses or extra-uterine pregnancy, surgery should be resorted to at once, as soon as the diagnosis can be made. Operation should not be delayed until accumulated suffering has invalidated the patient and lowered her vitality, or until such complications have developed that the hope of a successful outcome is destroyed.

It is an undoubted fact that the weak point of the average practitioner is diagnosis, and without accurate diagnosis there can be no satisfactory treatment. Because a man is not doing surgery is no reason why he should not know the principles of surgery and be able to make an accurate surgical as well as medical diagnosis. It is expected of the surgeon that he should first be thoroughly competent as a physician, and why should not the rule work the other way.

In a recent editorial in the *St. Louis Medical Review* on the "Value of Surgical Articles to the General Practitioner," the editor says: "But surgical articles will not help the man seeking light with a case of intestinal obstruction on hand. He wants something that will help him with that. But suppose it is one of those cases of intestinal obstruction that nothing but surgical measures will help. By not studying the surgical side of the question he loses the exact psychological moment at which operation by one of his more practised colleagues would have been successful, and he thus loses a patient's life, his future client, and the kudos attaching to a good diagnostician, all at the same time. But what does he care of hydatids of the liver. He has never met with a case and he knows none of his confrères who has. And meanwhile in the neighboring city the surgeon is operating on such a case too far advanced to be hopeful of a beneficial result because one of these same confrères, who has never encountered a case of hydatids of the liver, has been losing valuable time over this very case which he has been treating for pleurisy with effusion."

Grasping the surgical opportunity is the important factor in the prognosis of surgical cases.

Early operation where surgery is indicated at all saves life, conserves health and prolongs usefulness; late operations mean recoveries that are imperfect, more serious risks and greater loss of life. Every surgeon will immediately appreciate this thought, and could every physician stand daily by the operating table and experience practically the added difficulties encountered by reason of complications due to delay and loss of valuable time while the disease is progressing he would be less anxious to be considered ultra-conservative by waiting until everything else has been tried before suggesting operative measures; and less hasty in accusing surgeons of wanting to rush every patient to the knife.

This is strikingly apparent in cases of gall-bladder disease, in which repeated attacks of inflammation have so obscured the anatomical relations by successive crops of adhesions that the difficulties as well as the risks of operation are materially increased; or in cases of appendicitis that reach the surgeon too late on account of the temporizing expectancy of medical treatment. It has been said that no case of appendicitis ought ever to be lost, or putting it another way, that there was a time in the history of every case of appendicitis in which an operation would have saved the life. This same principle applies to all pelvic diseases. Every attack of pelvic inflammation in a woman, although slight, means the formation of a new crop of adhesions to surrounding structures. Every new adhesion means an added difficulty in the course of the operation and a greater risk to the patient. It is certainly true that the risk of every abdominal operation where inflammation has been present bears a constant ratio to the number and character of the adhesions that have to be dealt with. The following case is cited to illustrate this statement and to emphasize the serious condition the patient may drift into purely from delay in suggesting operative measures. It is but a type of hundreds of cases seen by operators every year, and it also shows how a reputable practitioner will often fail to find out the true condition by neglecting to investigate his case thoroughly and consequently allowing his patient to go beyond the line of safety.

*Case I.*—A. L., aged twenty-seven years, white, sent into the hospital on account of a bad discharge, with the request that she be cured. Her general appearance is good, has borne one child, no miscarriages, menses regular and without pain, vulva normal, sleeps well, appetite fair, digestion good and bowels regular. She has no laceration of perineum or cervix, bladder gives no trouble, no hemorrhoids. On examination the whole abdomen is tender and hard, endometrium inflamed and there is a purulent discharge. A mass the size of an orange can be felt on the left side. Gives history of several attacks of pelvic inflammation and pains all through abdomen. On opening the abdomen everything in sight was found bound together with the densest adhesions

firmly organized, the whole mass being adherent to the anterior peritoneum. In separating the adhesions so much difficulty was experienced that at first it seemed almost impossible to find the planes of separation and reach the mass, which proved to be a large abscess of the ovary. This was evacuated and both tubes and ovaries removed. Large raw areas were, of course, left all over the surfaces of the bowels. An attempt was made to repair the coats of the bowel wherever they were torn, but the tissues were so friable that it was almost useless to do so. The abdomen was closed with drainage through the vagina. On the sixth day after operation urine and fecal matter showed on the gauze and we knew we had both ureteral and fecal fistulae to deal with, two of the most troublesome complications possible. After long suffering the weakened patient was finally carried off by a severe hemorrhage from the fistulous tract.

Does not such a case teach a valuable lesson to the "dilly-dallying waiters," or to the physician who treats expectantly such cases through repeated attacks of pelvic inflammation and even general peritonitis, without ever stopping to take the trouble to make a careful examination and satisfy himself that there is no abscess formation or neoplasm of any sort? Certainly had this patient, naturally of a vigorous constitution and strong vitality, been brought to the surgeon's table before these repeated attacks of inflammation had agglutinated everything in the abdominal cavity in firmly organized adhesions, the operation would have been an easy one, practically without great risk. A life would have been saved for the home and the community, and all this was lost by lazy medicine, imperfect diagnosis and failure to grasp the surgical opportunity afforded by an earlier operation.

Another case may be briefly referred to in order to show that these complaints do not always receive from the practitioner the careful consideration and investigation they are entitled to.

*Case II.*—C. M., colored, aged thirty years, was referred to the hospital for a ventrosuspension because she had pains in the abdomen, and told her physician "she thought her womb came down." On examination it was found that she had no lacerations of the perineum or cervix or relaxed vagina, and her external sexual organs were normal; but the uterus was retroflexed and firmly fixed to the rectum and to the left by strong adhesions. Both tubes were enlarged and the left ovary cystic. The operation was a tedious one as well as serious on account of the difficult adhesions encountered, the patient finally dying of shock and exhaustion. Here the diagnosis had never been made by the attending physician, who afterward admitted to me that he had not even examined the patient.

Experiences like these are common to the gynecologist and abdominal surgeon. They should not be. In some cases the practitioner has not

perfected himself in diagnostic skill in this class of cases and may be doing the best he can, but failing to discover the condition present; in others it perhaps is an antipathy to this class of work; but what shall be said of him who does not even try, and fails even to make an examination of his patient, in the face of such conditions that are serious or may become so at any time, thus allowing his patient to drift beyond the danger line over which she cannot come back, to miss the opportune moment at which a surgical operation might have been of benefit, and to lose her life or most seriously jeopardize it?

#### THYROTOMY VS. LARYNGECTOMY: NOTES ON THE FREQUENTLY MALIGNANT NATURE OF CHRONIC HOARSENESS.

BY CHEVALIER JACKSON, M.D.,  
OF PITTSBURGH, PA.

It is not the writer's purpose to weary you with a multitude of cases, prolixity of statistics, or lengthy argument. Two strongly contrasting typical cases will suffice to illustrate a point, the proof of which can be seen frequently in any large throat clinic. The point the writer wishes to urge is the frequently malignant nature of chronic hoarseness, and the necessity for early diagnosis while the case is still operable by thyrotomy, whereby not only the life, but the voice, the comfort, the happiness and the usefulness of the patient may be saved. If the diagnosis be made late, as it usually is, total laryngectomy offers the only hope of prolonging life.

The writer has said nothing regarding endolaryngeal operation. He can only say that he considers his years of training to acquire endolaryngeal skill an utter waste of time so far as the surgery of malignant disease is concerned. It is ten times worse than letting the growth alone, for while failing to extirpate radically it induces local spread and metastatic deposit.

*Case I. Laryngectomy, total.*—M. M., aged fourteen years, for a year or two had noticed himself rather more subject to "colds" with hoarseness which disappeared between times until the last month or two, when it became constant. There was almost no cough, no dysphagia or odynphagia, no pain, no foulness of breath, no expectoration of blood or pus, no cachexia, no emaciation, not the slightest loss of weight. In short, he was the picture of health; yet laryngoscopy by the family physician revealed an epithelioma about the size of a pea on the right cord. The attendant urged the patient to come to the writer for immediate thyrotomy. The patient came but scouted the idea of cancer. He said he had often had even greater hoarseness before, and got well. He lost three months of valuable time in getting opinions and treatment from irregular practitioners and then returned to the writer for operation. What had been intrinsic epithelioma, readily cur-

Read at the Meeting of the Pennsylvania Medical Society, September 26, 1905.



able by thyrotomy with good return of voice, had become extrinsic by extension, with total laryngectomy as the only hope of prolonging life. With the assistance of the family physician, the writer removed the larynx and a few scattered lymphatics along the trachea and beneath the carotids on the right side. A contrivance of the writer's enabled useful whispered voice, but eight months later a recurrence in the cervical lymphatics with pulmonary and hepatic metastatic deposits quickly terminated the case.

*Case II. Thyrotomy.*—C., thirty-seven years of age, had a slight hoarseness of one month's duration, attributed by him to a severe "cold in the head and throat." No pain, no expectoration, no hemorrhage, no odor, no loss of weight—in fact, not one symptom but the hoarseness. Laryngoscopy showed a small epithelioma (histologic report later showed it to be the squamous-celled variety) on the under surface of the right vocal cord. The writer did a thyrotomy. The thyroid cartilage was split in the median line, both halves retracted, the growth with a wide area of surrounding healthy tissue, including the entire right vocal cord, was clipped out. Matters of technic are without the scope of this paper. The wound was healed in ten days, the voice was a loud whisper during the first three months, after which a rough phonation began to appear, and now, after four years, the voice is practically perfect not only for speaking but for a simple song of limited range.

Statistics wearisome in length could be presented, but the brief notes of these two typical cases suffice to illustrate the following points, which prolixity could only emphasize:

1. The patient with cancer of the larynx must have his disease discovered early, else a cure is well-nigh hopeless.
2. If discovered early the comparatively slight operation of thyrotomy will cure.
3. If discovered late, total or partial laryngectomy will probably prolong life for a variable period, but recurrence is fairly certain and the short extension of existence lacks many pleasures and comforts.
4. The early curable stages of laryngeal cancer are characterized by nothing but hoarseness, which may disappear and recur. Cough, odor, pain, odynophagia, glandular involvement, external swelling, emaciation, cachexia, etc., are present only after the curable stage is passed.
5. The curable case may come in "to get something for a cold that he cannot shake off," without any idea of a serious condition, and throw us off our guard.

In conclusion, the writer begs to say that although the surgery of malignant diseases is discouraging, it is, in the larynx, only so when seen late. In early thyrotomized cases the prognosis as to cure is better than it is in chronic laryngitis.

Let us all bear in mind the frequently malignant nature of chronic hoarseness.

## TUBERCULOUS KIDNEY.

BY J. BAYARD CLARK, M.D.,

OF NEW YORK;

GENITO-URINARY SURGEON TO BELLEVUE HOSPITAL OUT-PATIENT DEPARTMENT; ADJUNCT ASSISTANT GENITO-URINARY SURGEON BELLEVUE HOSPITAL; ASSISTANT SURGEON TRINITY HOSPITAL.

THE following case is reported because the steps toward diagnosis were interesting, as illustrating the usefulness of the cystoscope, the cryoscopic examination of the blood, and in this instance the radiograph.

*Case.*—B. McM., a young Irish woman, single, twenty-eight years old and employed as a domestic, was very kindly sent to me for diagnosis and treatment by Dr. F. Tilden Brown. She was admitted to Trinity Hospital November 27, 1904.

Her father died of pleurisy at the age of forty-one, otherwise her family history was unimportant. She came to this country six years ago. She had always been perfectly healthy and able to work. Three years ago she commenced to suffer occasionally with a rather sharp pain in the lumbar region, which would last an hour or two, and which she thought was more on the right side than on the left. This continued for a little over a year, when she first noticed that she had to pass her urine more frequently than usual and that it was attended with some discomfort. The pains in the back at this time seemed to disappear and the frequency of micturition increased rapidly, until at the end of a month she was compelled to urinate every fifteen or twenty minutes during the day, and five or six times at night. The discomfort which had attended urination developed into a burning pain, most intense as the last few drops of urine were being voided.

She then consulted a physician, who examined her urine and told her she was suffering from catarrh of the bladder. Internal remedies were prescribed, but the condition was not relieved. Five months dragged along in this way and she then entered a hospital, where she remained for six weeks, during that time she received as treatment irrigations of the bladder. When she left the hospital her urination was somewhat less frequent but more painful. She returned to work, and for a little over a year she attended to her duties, in the meantime receiving by way of treatment more bladder irrigations. At this time she noticed that she occasionally passed a little blood at the end of urination. She lost thirty pounds in weight, from 156 to 126 pounds, and had become too weak to attend to her work any longer.

*Physical Examination.*—The loss of weight was evident, but she was not emaciated. Somewhat anemic, cheeks flushed; heart and lungs were normal; abdomen, except for the following, was normal: the lower pole of right kidney could be felt, but no more than in many healthy females; it did not appear to be enlarged; there was no tenderness. The only point of tenderness on pressure was over the urinary bladder. The

external genitals were normal; bimanual examination revealed nothing abnormal further than tenderness of the bladder. The patient was put to bed on a light, nourishing diet, the only medication being five grains of salol three times a day, by way of preparation for a cystoscopic examination a few days later.

*November 28.*—First day after admission to hospital, the urine analysis of a catheterized specimen showed a cloudy pale amber urine, specific gravity 1.012, amphoteric reaction, a trace of albumin, no sugar, no bile, small amount of indican, urea .81 per cent. and chlorides 1.14 per cent. The microscope showed a small amount of mucus, a moderate amount of pus, no blood or casts, a few bladder (?) epithelia. No tubercle bacilli were found.

At the end of a week the following observations were made: An afternoon rise of temperature of 6/10 to 8/10 of a degree F., a pulse between 70 and 80, average amount of urine for twenty-four hours, 47 ounces, average number of times urine was passed in twenty-four hours, ten; average amount each time, between four and five ounces; urination a little less frequent during the night; patient sleeping well during intervals, and preserving a fair appetite.

Up to this time there was nothing upon which to build a diagnosis. The history was merely suggestive. The physical examination and the urinary analysis simply bore out the previous supposition of a bladder affection.

*December 7.*—Under cocaine anesthesia a thorough cystoscopic examination was made. The base of the bladder on the right side was slightly hyperemic, especially the trigone. The right ureteric orifice was about three times larger than its fellow, elliptical in form, margin thickened and rigid, all muscular action had gone; it remained open and its cavity was highly inflamed, small jets of cloudy urine issued infrequently. Backward and to the right of this ureter-mouth for about 2 cm., a cord-like elevation of the mucous membrane could be seen; this I took to be the thickened intramural portion of the ureter. At about the upper extremity of this was an irregularly ulcerated area about one centimeter in diameter; leading from this upward to the fundus of the bladder was a narrow ulcerated path which terminated in another irregular ulceration, which was twice the size of the first; this was flecked with small grayish-white patches, and was surrounded with a blush of hyperemia. Except for a low grade of inflammation which gave the mucous membrane a slightly softer appearance, the rest of the viscus was negative, including the left ureter mouth, which gave forth at frequent intervals, jets of clear urine.

This examination made, to my mind, tuberculosis of the right kidney extremely probable. Frequent examinations of the urine for tubercle bacilli were then instituted, and continued for about three weeks without avail. Guinea-pigs

were then inoculated but died of sepsis within a week or ten days. Tubercle bacilli were found, however, on two occasions within this time in the urine. They were in very small numbers but characteristically grouped.

The next step in the process of diagnosis was to obtain the separate urines, with a view not only of learning more accurately the condition of the diseased organ, but of getting an estimate of the functioning capacity of its fellow.

On January 3, a catheterizing cystoscope was introduced. It was found impossible to advance a catheter beyond the mouth of the right ureter, on account of obstruction undoubtedly due to its diseased condition at that point. The left ureter was easily catheterized and 16 cubic centimeters of clear, light-colored urine obtained. This, on examination, was of neutral reaction, no sugar or albumin present, urea 1.5 per cent. The microscope showed a few red blood cells and epithelia, which commonly occur with the use of the ureteral catheter. No tubercle bacilli were found.

It will be seen that this urine was that of a healthy kidney and that the abnormal elements previously obtained came from the right kidney and ureter, with the bladder participating.

To make more sure of sufficient renal function, Dr. Alfred T. Osgood was good enough to determine the freezing point of the blood, which was  $-0.55$  degrees C., thus showing no undue molecular concentration.

I then took the patient to Dr. L. G. Cole, who took an excellent radiograph. [Although the X-ray showed the situation beautifully, it was unprintable.] The picture added much weight to the evidence already collected, for it showed a shadow of considerable density, the outline of which softened out almost too gradually to be mistaken for a stone. A growth of firm connective tissue replacing parenchyma seemed the most likely interpretation, and the correct one, as the specimen later showed.

The *diagnosis* was then as follows: Primary tuberculosis of the right kidney with extensive destruction of the organ and extension of the process to the bladder. The left kidney functionally capable of carrying on the work of elimination for the body.

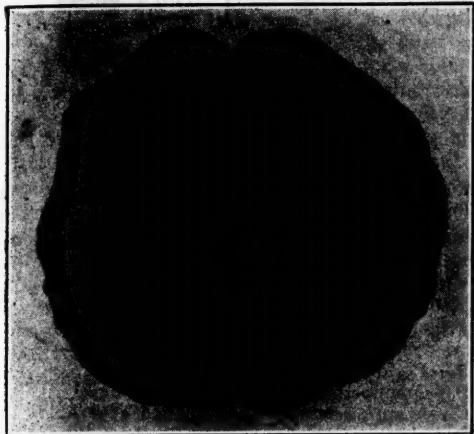
On January 18, I removed the right kidney by the extraperitoneal route.

*Pathological Examination of Kidney.*—Weight, 144 grams; length, 10.5 cm.; width, 4.5 cm.; thickness, 4.5 cm. Gross appearance: The surface retains the type of fetal lobulation. Through the capsule are seen many small foci about pinhead size, which resemble miliary tubercles. These are most numerous about the central zone of the organ. There is a marked engorgement of the vessels beneath the capsule and an extensive subcapsular hemorrhagic exudate, giving a dark red color to almost the entire extent of the surface. Section through the convexity of the organ in its longitudinal axis shows



the following: Average length of pyramids, 2.8 cm.; average thickness of cortex, 0.6 cm. A thin hemorrhagic zone beneath the capsule. Cortex very light-gray color, markings obliterated, line of junction with medulla indistinct, in places indistinguishable. Occasional small gray bodies, pinhead in size, which resemble tubercles.

The medulla has almost lost its identity by being converted into a grayish fibrous tissue, in



which there are abscess cavities, the largest measuring 2 cm. in diameter. The two largest of these cavities encroach on the cortex, and are lined by cheesy-looking material, and about one is a considerable hemorrhagic exudate.

The pelvic wall is thickened and contracted. Its mucosa has a rough, cheesy-looking appearance. At one point in the fibrous portion of the wall, is a hemorrhagic exudate 1.5 cm. in diameter.

The blood-vessels show some thickening.

**Microscopic Examination.**—Connective tissue system. The capsule is represented by a thin, ragged layer of fibrous tissue which is permeated by inflammatory exudate. Beneath the capsule there is a layer of vascular fibrous tissue of considerable thickness. The fibrous tissue passes into the medulla in places as broad bands of connective tissue. The fibrous tissue is quite cellular and there are many areas of small, round cell infiltrations. There are many miliary tubercles scattered through the newly formed tissue. They are mainly fibrous in the cortex, but in the medulla they are represented by large areas of coagulated necrosis surrounded by fibrous tissue. Many giant cells are associated with these tubercles. The newly formed tissue beneath the capsule is infiltrated by hemorrhagic exudate. The capsule of Bowman in many places is much thickened. The intertubular tissue is increased in strands and islands. A few places present the normal amount of stroma.

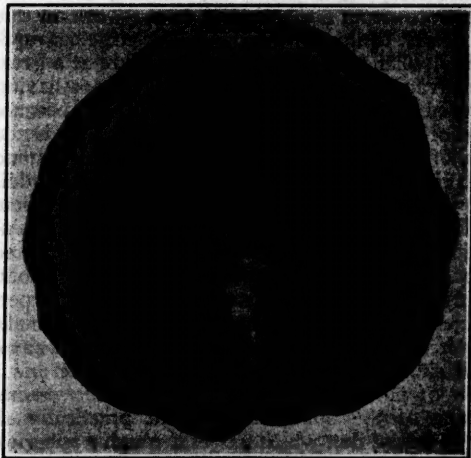
**Parenchymatous System.**—In the fibrous tissue zone beneath the capsule, the tubules have almost

entirely disappeared. An occasional tubule can be seen much diminished in size with the epithelium desquamated or flattened. Some contain hyaline casts, others hemorrhagic exudate. There is extensive parenchymatous degeneration and disintegration of the renal epithelium generally. Some of the tubules are dilated, and their epithelium flattened, others have their lumen completely filled by their swollen epithelium. In some instances, the epithelium is entirely desquamated and the tubule empty. Some contain hemorrhagic exudate, others casts.

**Vascular System.**—The walls of the large vessels are slightly thickened, in some places the intima, in others the adventitia. The capillaries of the glomeruli are congested, and the spaces about some contain hemorrhagic exudate. Many of the glomeruli have undergone sclerotic changes, and are represented by islands of the firm fibrous tissue in which is some hyaline change.

The abscesses described in the gross have an inner layer of coagulated necrosis and an outer wall of firm fibrous tissue, in which are scattered a few giant cells. The fibrous tissue is surrounded by a zone of hemorrhagic exudate which infiltrates the chronic interstitial change involving the cortex. The hemorrhagic area in the wall of the pelvis shows miliary tubercles, round-cell infiltration, edema and hemorrhagic exudate.

The patient reacted well from the operation and her postoperative course was uneventful.



I was most forcibly struck by the immediate and almost complete cessation of her most distressing symptom, namely, the great urgency of micturition. After the first twenty-four hours, during which time she was catheterized, she was able to hold her urine five, six and sometimes seven hours. She enjoyed for the first time in two years, uninterrupted nights of sleep. The point of interest to be noted here, is that the irritating character of the material coming from

the diseased kidney was the predominating causal factor of the frequent urination, and not the vesical ulceration. The pain which accompanied urination still exists, but is progressively decreasing.

**March 6.**—Cystoscopy: The general appearance of the bladder mucous membrane improved. The right ureteric orifice has contracted to one-half its former size, no signs of active inflammation. The ulcers are reduced to about two-thirds their former size, their edges are healthy and there is no surrounding hyperemia. The left ureter-mouth and surrounding area is, as before, normal, clear urine issues from its mouth. The urine analysis gives no evidence of kidney involvement. The patient is passing 45 to 55 ounces of urine daily, at almost normal intervals and in normal amounts. The wound has healed but for a small sinus, which is progressing favorably.

The patient is gaining weight and strength. She has gone to the country to complete her convalescence.

616 Madison Avenue.

**A SIMPLE DEVICE FOR OPHTHALMOSCOPIC WORK,  
DEvised ESPECIALLY TO MEET CONDITIONS  
EXISTING ON BOARD SHIPS, BUT CAPABLE  
OF GENERAL APPLICATION.**

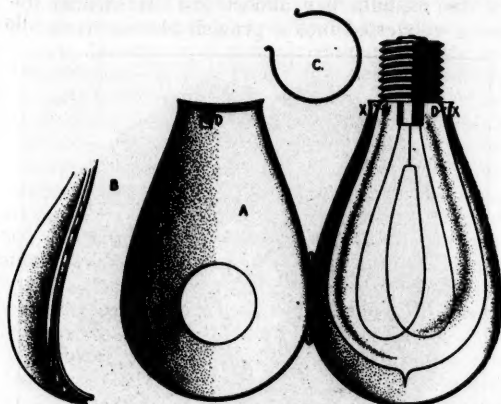
BY R. E. RIGGS, M.D.,  
ASSISTANT SURGEON U. S. ARMY.

EVERYONE familiar with the use of the ophthalmoscope knows how difficult it is to get a satisfactory light under the varying conditions which confront one trying to do eye-work outside of a well-equipped office. Naval surgeons especially, when serving on board ship, are at a great disadvantage in this respect, first, in not having special apparatus allowed them, and also because the ordinary lamp made for this purpose is too elaborately arranged and unwieldy to withstand the rough usage incident to sea-going. In addition, most of these require gas for illumination.

I have overcome all difficulties by simply enveloping an ordinary 16-candlepower frosted electric bulb in a thin sheet of lead. The accompanying drawings illustrate the relatively perfected shield which I now have in use. To make a perfect shield requires, of course, some mechanical skill, but it is easy with a jack-knife and a pair of pincers to mold the sheet to the general shape of the bulb, shutting out practically all light except that which passes through a spherical window about 1 inch in diameter, cut into the shield after it is applied. And that is exactly how I made my first shield.

Thus with a little ingenuity, and in a few moments, anyone who cares to try it, and has electrical attachments at hand, can construct for himself a portable and satisfactory light. It may be suspended from any convenient point and allowed to take a position just behind and to the outside of the ear on the side under examination.

Although any opaque shield might do, such as copper may dull by mercury or acids or copper deposited on the bulb by electrolysis, still I prefer the lead sheet because its dull modest luster hardly acts as a reflector at all. The light obtained is soft and equally distributed, and one is scarcely bothered at all by the corneal reflex. The background of the eye is distinctly though



- A.—Perforated half of shield.
- B.—One section of same, showing bevel a.
- C.—A spring which when applied at *x* holds the shield shut.
- D.—Wedges of incombustible material which are only points of contact between bulb and shield.

softly illuminated, and besides giving the observer an almost normal image, it inflicts upon the patient a minimum amount of discomfort.

With this arrangement one can easily observe the fundus without the use of a mydriatic, nor is it necessary to have a perfectly dark room. It also gives an equally good view in work about the ear, nose or throat.

**THE RELATION OF INCONTINENCE OF URINE TO  
NEURASTHENIC SYMPTOMS, AND ITS  
TREATMENT BY THE ISOLATED  
INDUCTION SHOCK.**

BY A. D. ROCKWELL, A.M., M.D.,  
OF NEW YORK;

NEUROLOGIST AND ELECTRO-THERAPEUTIST TO THE FLUSHING  
HOSPITAL, ETC.

INCONTINENCE of urine, although mostly a symptom of early age, is not infrequently observed in persons of larger growth. In various forms and degrees it is occasionally associated with that form of neurasthenia where general constitutional symptoms predominate, and sometimes where the manifestations are distinctly and almost entirely local. To relieve a persistent local manifestation is often paramount to the relief not only of many a constitutional derangement, but of other local symptoms as well. The pathological relationship between incontinence and the varied symptoms of the neurasthenic, we may not

I Read before the New York County Medical Society, September 25, 1905.



discuss at this time even were it possible to throw much light on these relationships; but it is possible in some cases, fortunately, to relieve obstinate neurotic symptoms in both young and old, if we can succeed in relieving the incontinence with which they are associated and upon which they seem sometimes to depend.

The treatment of incontinence of urine, whether by internal medication, by topical applications, or by the various physical methods, external and internal, has yielded as a rule results quite unsatisfactory.

Electricity in the past has been no exception to this rule. It has been used for the most part as a tonic to the nervous system as a whole, or locally in the form of the galvanic or the rapidly interrupted faradic current. The difficulty has been that in the treatment of incontinence by electricity we have not sufficiently considered its etiology and pathology. Those cases that are due to an acquired or an organic lesion of the nervous system are generally beyond the reach of any treatment. Fortunately such cases are rare, the majority being known under the name of essential nocturnal incontinence, due to some dynamic alteration that in our ignorance we call functional. Demonstration has shown the existence of muscular atony, with failure of the external sphincter properly to functionate. This atony is believed to be due to incomplete development of the perineal striated muscles and the external sphincter of the urethra, which thus fail not only in their obedience to the will, but in their response to reflex influences. Such measure of success as formerly attended the efforts of the writer in overcoming this weakness, and it was far from constant or satisfactory, was through the use of the galvanic rather than the faradic current. Within the past few years, however, he has substituted for the rapid vibrations of the high-tension coil formerly used, currents of slow intermission, with distinctly better results.

Not every case of incontinence is curable by the isolated induction shock, or indeed by any other method. The majority of cases of constipation, for example, are not curable by electricity alone. The cases that are greatly benefited are those where there is defective intestinal innervation, or abdominal and intestinal atony. Even in these cases, if the atony is due to congenital defect, all that can be done is to improve the general health. No physical local method will avail. How frequently incontinence depends upon congenital deficiency, no one can say; a considerable proportion undoubtedly thus accounting for failures of treatment. The principle underlying any form of treatment looking to the amelioration of this annoying symptom of incontinence, therefore, is increase in the tone of the muscles controlling the act of micturition. We unquestionably fail to accomplish this end by the use of the rapid intermittances of the ordinary faradic apparatus. By this form of application we induce a condition of physiological tetanus, which in my experience

has sometimes been followed by an increase rather than a decrease in the severity of the symptoms. This is due to the recognized fact that physiological tetanus, especially when it is prolonged, exhausts rather than invigorates the muscular tone. A slow interruption, say one or two per second has a far different effect. Between each contraction the muscular fibers have a distinct period of rest, with the result that their power of vigorous voluntary contraction and relaxation is strengthened and not weakened. This at least is believed to be the case, since in no other way can be explained so satisfactorily the undoubted superior effects of these distinct rhythmical muscular contractions over the muscular tetanization produced by the more rapid interruptions.

In very young children the treatment is preferably and quite necessarily external, although there is no question that the best results are obtained by the introduction, when possible, of an olive-shaped electrode connected with the negative pole until it reaches the sphincter muscle. The indifferent electrode, consisting of some flexible metal covered with sponge or other suitable material is applied to the abdomen, or if the muscular contractions following the interruption of the current are objectionable, this electrode may be applied over the sacral region. The technic is simple, but not so simple as to be free from mistakes in its practical application. It is not the slowly interrupted faradic current that is called for, as is sometimes thought, but the isolated induction shock. Nothing could be more apt as an illustration of this important point than the following incident: A physician to whom I had recommended this measure in a case of incontinence associated with neurasthenic symptoms, and who intimated that he clearly understood the directions given, informed me subsequently that he had faithfully carried out these instructions, but with no result. In a personal interview I found that he had simply interrupted the ordinary faradic current with its vibrations of some 200 to the second. He was told of his mistake, and again undertook the treatment of the patient, and subsequently this is what he wrote: "What an ass I was . . . I am glad, though, to tell you that since I began the right treatment the patient has improved right along."

In the treatment one must be guided in great measure by the sensations of the patient, but if in the beginning the shocks are slight they can be gradually increased without difficulty, since no real pain accompanies the treatment, unless the strength used is far beyond the necessities of the case.

During the past five years fifteen cases of incontinence have come under my observation, all of which have been treated by the method described. Of these cases seven completely recovered and without relapse, four were greatly benefited but have suffered various relapses and cannot be classed as perfect recoveries, and four

cases disappeared from observation before giving the treatment a fair trial. One case alone I venture to report, not only as an illustration of the possible therapeutic value of the method, but because of the interesting relation of the symptoms to the nervous system.

Mary C., a large well-developed girl of thirteen, was brought to me October 17, 1903, suffering from great depression of spirits amounting almost to melancholia, associated with incontinence of urine.

The mother gave the following history, premising it by the statement that she herself had been the victim of incontinence from her earliest childhood, until her eighteenth year. To the age of seven or eight the patient had been as other children, but after an attack of scarlatina about this time she began to suffer from incontinence, and for five years she had rarely passed a night without voiding unconsciously a large quantity of urine. This weakness prevented her from spending the night away from home, or having any of her girl friends with her, and this inability to indulge in these ordinary and highly-prized amenities of girlhood greatly depressed her. She became subject to frequent attacks of profound melancholy, and it was more because of this symptom than for the incontinence for which she had already received much treatment—electrical and otherwise—that the patient was brought to me.

As near as could be gathered, both currents—the galvanic and faradic—had been used with some persistency, one electrode upon the perineum and the other alternately over the abdomen and back. The mother and patient both agreeing to the internal method of application, the positive electrode was applied to the sacral region, and the negative, consisting of an olive-shaped electrode, introduced through the urethra to the sphincter muscle. The isolated induction shock was then administered at the rate of one in five seconds or about twelve shocks per minute. The applications were repeated every other day for a time, and then less frequently. The character of the treatment so far as concerned rapidity of interruption was approximately adhered to throughout the whole course. The patient finally recovered, but the progress toward complete recovery was neither rapid nor constant, some thirty-five applications having been administered through a period of five months. During this period she had alternations of comparative freedom from attacks and their recurrence with ordinary frequency, but the progress was steadily upward. This progress of slow recovery would seem to eliminate any probability that the result was due to suggestion, as has been affirmed; and that the causative factor of her neurotic condition was the incontinence became evident from the fact that the melancholia disappeared as micturition became normal.

The question of the character of the coil to be used is not unimportant. Shall it be the primary

or secondary coil, or if the apparatus is of the continuous coil variety, shall the current selected be from the short and thick or from one of the long and thin windings.

Not only do these manifestations of induction vary in their physical and physiological effects, but therapeutically they are by no means the same.

The action of the secondary current through the high resistance of the skin is one thing; through the low resistance of the mucous membrane it is quite another. Through high resistances currents of high tension act more vigorously on motor and sensory nerves than through low resistances, and conversely, currents of low tension but of increased magnitude or amperage produce greater motor and sensory effects through low than through high resistances. Theoretically, therefore, it seems rational that for the production of a vigorous and satisfactory muscular contraction through mucous membrane, these currents of low tension but appreciable magnitude should be preferred to currents of high tension but of a magnitude altogether negligible; and practically I have found this to be the case.

616 Madison Avenue.

#### THE TREATMENT OF CONDITIONS RESULTING FROM CHRONIC ANTERIOR URETHRITIS.<sup>1</sup>

BY W. D. TRENWITH, M.D.,

OF NEW YORK;

GENITO-URINARY SURGEON TO O. P. D. NEW YORK HOSPITAL.

In choosing to write of this phase of a very much written of subject, I do so with two very definite objects in view, namely: (1) To bring before you the treatment of a class of cases, too commonly neglected and yet fraught in a great many instances with much real danger to patients and later to their wives, should they marry, with the possibility of still further passing the infection to the children as a gonorrheal vaginitis in the little girls, or as a gonorrheal ophthalmia; and (2) in the hope that more careful attention may be given to those suffering from gonorrhea, to the end that a real cure may be gained.

In my long connection with the Genito-urinary Department of the College of Physicians and Surgeons, and also with the New York Hospital, I have seen only too many cases of neglect in treatment among those patients who applied for relief from genito-urinary troubles, in many instances traceable to the fact that they had long considered themselves well, the idea being perhaps fostered by some physician, because no discharge was to be seen.

In the study of a series of cases of vaginitis in little girls, under my care at the Vanderbilt Clinic, the results of which I hope soon to embody in a paper, the infection from gonococci was traced through the mother to the father in

<sup>1</sup> Read before the West End Medical Society, New York, September 23, 1905; and by invitation, before the Passaic City Medical Society, of Passaic, N. J., October 12, 1905.



about 60 per cent. of the cases. Moreover, a gynecologist of some note recently reported 66 per cent. of his work as resulting from gonorrheal infection.

In view of these facts I am disposed to consider the matter of more than minor importance, and so write, hoping that I may help in some small measure toward the prevention of the spread of this really dread disease among those who are innocent and helpless.

The symptomatology of the cases under discussion is a rather varied one; most frequently, however, the patient presents himself complaining of a glueing together of the lips of the meatus during the night, most noticeable, therefore, in the morning; or a slight mucopurulent discharge constantly present day and night; or of a feeling as if a drop of urine were passing from him long after the act of urination; or of a forking or twisting of the stream of urine, and perhaps of straining in passing it, and of lack of force in the stream itself; or of a burning sensation situated at various points along the penis; or perhaps he notices a discharge or has trouble only after a drinking bout or after excessive sexual indulgence.

In many cases the condition is one which has long remained dormant, the result, however, of some earlier infection of the urethra, improperly treated, or considered cured as soon as the discharge disappeared, or perhaps neglected entirely; other cases are but the extension of a recent acute condition into a chronic one.

We have therefore to do, not necessarily with a gonorrheal process *per se*, but with one due to the inflammation caused by the gonococci, from which the gonococci, however, have usually disappeared. And if the urethritis be due to the gonococci, which in almost all cases it is, the danger lies in the fact that, though it is not possible to demonstrate the gonococci in many cases, they may still nevertheless be present, awaiting only new soil to grow upon, or perhaps, upon provocation, to reinfect the patient himself.

The resulting condition is an indolent, relaxed, catarrhal condition of the membrane, or a hyperplasia of portions of the urethra, or simple erosions, or the production of new connective tissue, forming strictures of various degrees and density with perhaps erosions behind the stricture, or infected follicles which furnish a constant source of irritation by the discharges coming from them.

Here, then, we have an array of conditions somewhat appalling, did they all ordinarily occur in the same patient; happily, however, we are not often called upon to treat more than two or three of the conditions named in conjunction.

I deem it most essential that by every means at our disposal we try to determine the exact status of the case. It seems to me that too much emphasis is laid upon the discharge alone,

and too little upon the conditions which cause the discharge.

The urine should always be examined at each visit, to note the amount and character of the detritus in the form of pus, shreds, threads, epithelium and mucus which it may contain, and also to gain some idea as to the progress which the case is making. The patient should therefore be trained always to come to the office with his bladder sufficiently filled with urine to be able to pass a specimen into the examining tubes or glasses.

The urethra should be examined at the first visit with the bougie à boule to ascertain the size, location, and number of strictures, if any, or any thickened or painful spots. The endoscope, too, can be used where strictures are not present, for the purpose of ascertaining by direct vision the exact character, location and degree of inflammation present, and the situation of any infected follicles.

As a routine measure I advocate the examination of the prostate and seminal vesicles. If they are in any way diseased, appropriate treatment should of course be instituted, but the scope of this paper being limited, I shall not deal further with the diseases or treatment of those organs.

From the use of the above procedures, together with the patient's history, we can make an exact diagnosis, and bring many cases to prompt cure because the attention will be entirely directed to the diseased area.

Before instrumentation of any kind, it is well always to sterilize the meatus as far as possible, washing it off with water and tr. green soap, and after with a solution of either carbolic acid or corrosive sublimate. All instruments should of course be sterilized before using.

If a stricture be present and not fibrous, situated in Region I of the urethra, olivary bougies should be at first passed, and the size gradually increased until No. 20 French is reached, when the curved steel sound may be substituted for the bougie. The bougies and sounds are passed once in from five to seven days, not oftener, and left in for five or ten minutes; the size increased, as the case will allow, until No. 30 French is reached.

This size is passed for a few weeks at intervals of seven days, then at intervals of two weeks, then a month, two months and so on until the patient reports about twice a year, to see that his improved condition is maintained.

After the passing of each bougie or sound, it is well either to irrigate the urethra with a solution of 1-8,000 silver nitrate, or to instil a few drops of 1-125 solution of silver nitrate at the site of the stricture; and as a precautionary measure against infection, it is my custom to give some urinary antiseptic such as urotropin gr. viiss or boric acid gr. v two hours after meals for a couple of days after.

Should the stricture be situated in Region II or III, straight steel sounds may be used in-

stead of curved, the treatment otherwise to be the same. Should the stricture be fibrous and not yield to gradual dilatation by the use of bougies and sounds, either internal or external urethrotomy is indicated, according to the requirements of the case. It is not my purpose, however, to go into details of the operation for stricture, beyond saying this, that it is most essential to remember that the operation itself is but the first step, so to speak, in the cure of the condition; sounds must be passed frequently, and for quite a period after the operation, to insure that the canal remain open; otherwise the resultant condition is several degrees worse than the primary one.

We pass, then, from the consideration of the conditions involving new connective tissue to those involving hyperplastic conditions, and indolent, relaxed conditions giving rise to catarrhal symptoms of more or less severity. These conditions have always seemed to me to be very much less amenable to treatment, more liable to recurrence, and more of a tax upon the patience of the patient and the physician.

The endoscope here is of the utmost value for purposes of diagnosis and treatment, though not suitable in every case for treatment.

Having determined that no stricture is present, and the endoscope showing us areas and patches along the urethra, usually involving the region of the bulb, and immediately anterior to it, of infiltrated, boggy membrane, hyperemic and easily bleeding, sounds of medium size—say about No. 25 French, and not increasing in size—should be passed every third or fourth day; in many instances the old psycrophore, now fallen largely into disuse, with a current of ice-water, may be used with great advantage.

In the earlier stage of treatment, I prefer to introduce eight ounces of a solution of silver nitrate, in the strength of 1-16,000 to 1-8,000, or Ultzmann's solution, diluted twice or three times, into the bladder after the use of the sound and allow patient to pass this immediately, thus distending the urethra naturally and at the same time medicating it.

Later, when the condition is somewhat relieved, the instillation of small quantities of the solution of silver nitrate 1-2,000 to 1-125 is productive of much improvement.

The instruments necessary for proper instillation are a soft rubber catheter No. 12 to 15 Fr. and a syringe, with a capacity of one or two drachms, with either the piston or barrel of the syringe, if glass, graduated in minims or drops, and with a long, sharp nozzle for insertion into the catheter. To instil, the catheter is lubricated with glycerin or chondrus jelly, and passed gently back to the triangular ligament, which will slightly resist its further introduction, the syringe, being filled with the desired solution, is then joined to the catheter, and the fluid is instilled gradually as the catheter is at the same time slowly withdrawn.

It is well usually to begin with a solution of silver nitrate 1-2,000 and gradually increase in strength thus: 1-1,000, 1-500, 1-250, up to 1-125, being governed by the amount of reaction caused, and the benefit derived as ascertained by the amount and character of discharge, if any, and of the amount and character of the detritus in the urine.

An instillation may be given every second or third day, watching carefully the reaction. No fixed rule can be given as to when to increase the strength of the solutions used; each case presents problems peculiar to itself, and the treatment must be ordered accordingly. The stronger the solution of silver used, the less should be instilled, one or two drams of the 1-2,000 strength; not more than five to ten drops of the 1-125 strength.

At times the end may be hastened by applying to the hyperplastic area, through the endoscope, stronger solutions of silver by means of small swabs, or with a small, fine spray of my own device.

For home use the patients have but simple things to use, morning and evening injecting several syringefuls of as hot a normal salt solution as can be borne, each injection to be retained perhaps half a minute; the heat has a wonderfully soothing, healing effect, as also to drive away the unnecessary blood from the part.

Injections of zinc sulph. and alum, of each two to six grains to the ounce of water, may be used twice or three times a day, being retained for one or two minutes. Injections should, of course, be used only after first urinating.

The endoscope oftentimes reveals to us very small and limited patches of thickened or eroded membrane. Such conditions are best treated through the endoscope, with solutions of silver in strengths of 5, 10, or 20 per cent. applied directly to the diseased area by means of small swabs.

Lugol's solution may sometimes be used with benefit, especially in small ulcerated areas, and 1 to 10 or 20 per cent. of ichthyol in water or glycerin is very valuable in those conditions where the membrane has become simply thickened.

Treatment should be used every fourth or fifth day; many of these cases can be satisfactorily and efficiently treated in this and in no other way.

Infected follicles are also to be destroyed through the endoscope by means of the galvanocautery, or by the use of acids, though the latter are mentioned only to be condemned.

A cure may be said to have been effected when there is no longer any discharge, and the urine, upon examination, is free from pus, shreds, or threads and remains so. Frequently a small amount of mucus is found in the specimen passed; this may be readily recognized by the fact that it floats to the top of the urine and is soon dissolved.



When several examinations reveal nothing more than this, except it be in excessive amount, I believe it best to discontinue local treatment, and try only to improve the physical condition of the patient, when it will usually disappear of itself.

Occasionally a patient presents himself with such a sensitive urethra that it is almost impossible to treat him in any way. Under such conditions the treatment may be carried out by first cocainizing the urethra with a 2 or 4 per cent. solution of cocaine; better, however, is the use of a solution of ichthyol as an irrigation, beginning with about ten drops of ichthyol to eight ounces of water, gradually increasing the strength at each visit until the sensitiveness disappears, when treatment along regular lines can be taken up.

I have purposely left until now speaking of drugs to be used internally and of diet. As regards drugs, it is to be remembered that the long-continued taking of the balsamics may themselves cause a moderate discharge, which will disappear when they are discontinued. On the other hand, where they have not been taken, a discharge may be stopped oftentimes almost at once by their use, santal oil in doses of  $\mathfrak{M}$ v or x, three times a day, two hours after meals, with half a glassful of water, will cause usually the least disturbance of the stomach; copaiba and cubebs are also of use at times when patients cannot take santal oil. If the stomach is disturbed, a dram or two of the essence of pepsin may be taken in the water with the capsules.

In other cases it seems desirable to keep the urine antiseptic, and for this purpose boric acid gr. v, or urotropin gr. viiss, are to be given two hours after meals in plenty of water; to these may be added tinct. hyoscyamus  $\mathfrak{M}$ v to xv, if there is a sensation of burning along the urethra.

As to diet, it should be of a good and wholesome character. The patient being no longer in the acute stage, only the very spicy foods, salads, asparagus, condiments and rich desserts are to be denied him; in fact, he should be encouraged to eat well and to keep himself in just as perfect a physical condition as possible, for I am convinced that many a patient's condition remains the same or improves but slowly, because of a "run down" state of his system, and our treatment is of but little avail, if we neglect to improve him physically, so that the parts will respond to our attempts to aid nature in the healing process, and to further this end tonics of iron, quinine, strychnine, cod-liver oil, or phosphorus, supplemented by sufficient exercise, plenty of sleep, and pure air should be employed.

In the matter of drinking, any of the malt liquors or wines seem to be particularly pernicious; whisky and brandy do much less harm, though of course I do not advise the taking of them; coffee may be taken in limited amounts.

Any excitation of the sexual apparatus is to be deplored, and will retard the cure.

In conclusion I wish to emphasize the following points:

1. The necessity of an exact diagnosis of the underlying conditions.

2. That all remedial measures used, whether internally or locally, should be governed by the reaction caused, and each forward step in the treatment taken only when the conditions warrant it.

3. That all treatment of the urethra be of the gentlest, remembering always that one of the most delicate membranes in the body is under treatment.

4. That attention to the general physical condition of the patient is often of as much importance in gaining a cure as the local treatment.

5. That the urine should be examined at each visit.

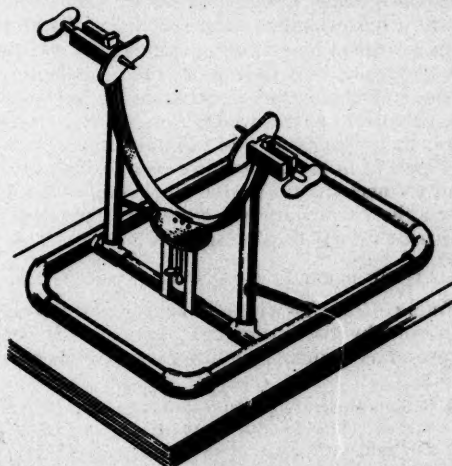
6. That no physician should be satisfied to call a patient cured simply because the discharge has ceased, and without an examination of the urine.

7. That the profession at large ought to begin to view this disease with a little less complacency, and to treat it in a spirit more in keeping with its serious nature.

#### AN IMPROVED HEAD-HOLDER FOR THE REMOVAL OF THE HUMAN BRAIN.

BY BERT B. STROUD, M.D.,  
OF ITHACA, N. Y.

THE inconvenience attending the removal of the human brain and the frequent injury to the more delicate structures of the brain itself, when the usual method is employed, have led the writer to devise the apparatus described below. It is the

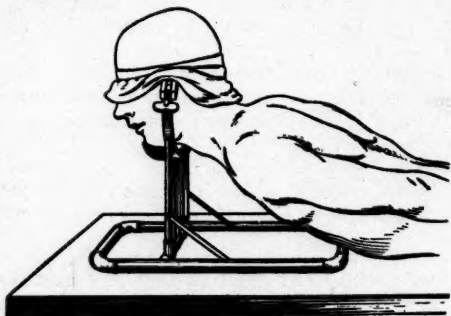


This illustration shows a general view of the apparatus in isometric perspective. Figure 2 shows it in use. The scalp has been reflected and the circular cut in the cranium made.

result of a long experience in the removal of brains for anatomical study. A modified form of this apparatus for use at necropsies, where both brain and thoracic and abdominal viscera are

to be examined at the same time, is in preparation.

The apparatus consists of a base made of steel tubing, to which is joined a movable upright that can be fixed rigidly at right angles to the base. The upright bears movable jaws to grasp the head upon each side and spurs to enter the auditory meatuses; also an adjustable support for the chin. The head is held firmly and both of the operator's hands are free. The apparatus is finished in white enamel and nickel; when not in use it folds flat, so that it occupies little room. I wish to thank Messrs. Geo. Tiemann & Co., New York City, for the superior manner in which they constructed the apparatus.



The subject lies upon the belly, the head being supported and firmly held by the adjustable clamps at the sides and chin. The base of the cranium is horizontal, and serves as a shallow tray in which the brain is supported while the cranial nerves, arteries, spinal cord and membranes are being severed. Thus it is possible to secure a perfect anatomical specimen. The cranium is opened by making a circular cut with the saw about one-half inch above the orbital prominence and the external occipital protuberance. The calvarium is removed either entire or in two pieces by making a second sagittal cut, about one-half inch from the median line over the top of the head to meet the horizontal line. Adhesions between the calvarium and dura are separated by means of a long flexible spatula.

#### A LIQUID FOR THE PRESERVATION OF BRAINS.

**Saline Alcohol.**—The following liquid has been employed by the writer for a number of years to preserve brains, and has given excellent results:

R Sodium acetate—400 grams.....	314
Sodium chloride—350 grams.....	312½
Formaldehyde 40 per cent.—60 c.c.....	fl. 32
Alcohol 95 per cent.—1400 c.c.....	fl. 347
Water—1600 c.c.....	fl. 354

Dissolve the sodium acetate and sodium chloride in fifty-four ounces of water by aid of heat. Filter and cool, then add forty-seven ounces of ninety-five per cent. alcohol and two ounces of formaldehyde. This quantity is sufficient for one human brain. If the specimen is much

stained by hemorrhage, the blood may be removed by soaking for a few hours in a solution of salt and water. Ordinarily this treatment will not be required. Brains should remain in the solution ten to fifteen days; but a longer period is not harmful. Then they may be put into 75 per cent. alcohol, which should be changed once or twice. They may remain indefinitely in 75 per cent. alcohol, or preferably be put into 82 per cent. alcohol.

The advantages claimed for this solution are:

(1) The mixture is simple and may be prepared at a moderate cost, about 14 cents per liter, alcohol free of tax. (2) It has about the same specific gravity as that of the brain, which should float without support midway between the top of the liquid and the bottom of the jar. Rarely a brain may sink to the bottom; in this case add more salt. If it floats on the top, add 50 per cent. alcohol until it sinks below the surface. (3) The specimens have a more natural appearance than when some other preservatives are employed. (4) There is no distortion. (5) It appears to give good results for brains which are very soft from decomposition. In these cases the pia cannot be easily removed. (6) Plexuses and membranous parietes are preserved. (7) The alba and cinerea are visibly differentiated. (8) Brains are moderately flexible, so that fissures may be explored. (9) Tissue hardened in it may be used for histologic study.

But, of course, special methods should be employed for exact cytologic work. With Mallory's hematoxylin (see *Anat. Anzeiger*, 1891, VI., S. 375) results have been obtained which, in some respects, excel those obtained by the Golgi method. The cell processes are stained, and some idea of cell structure can be determined. Besides the possibility that certain varicosities, which may be seen on some of the cell processes, are artefacts due to the Golgi method, is eliminated. For ordinary class demonstrations specimens prepared in this manner form a valuable adjunct to Golgi preparations.

#### SYPHILITIC FEVER.

BY JOHN A. MCKENNA, M.D.,  
OF PHILADELPHIA;

ASSISTANT SURGEON, MEDICO-CHIRURGICAL HOSPITAL.

THE varied symptoms which cloud the diagnosis of syphilitic fever and make its recognition difficult, may be ascribed to so many of the febrile diseases that the failure of the physician at once to classify properly a case in which syphilis is the cause, is both natural and pardonable.

Upon the writer's return in August from the Portland meeting of the American Medical Association, there was transferred to him a case of "typhoid fever" in a child of nine years, who had been sick for three weeks with a low grade fever, capricious in its rise and decline, but always higher in the evening than in the morning. Upon this fact—and a dry, coated tongue—had

the physician, who was called to see the case in my absence, based his diagnosis.

The child, a little girl, did present an almost typical typhoidal appearance at a casual examination, but while looking at the tongue, I noticed the striking picture which the teeth presented of probable inherited specific disease. Taking this hint in conjunction with the "bone pains" in the shins and forehead, I put the child on iodide of potash, gr. ii and bichloride of mercury gr.  $\frac{1}{80}$ , every four hours, and was gratified to note within sixteen hours an amelioration of the symptoms with a drop in temperature of more than a degree.

The temperature for the three weeks of the child's illness previous to my entrance into the case ran from  $99.2^{\circ}$  to  $100.4^{\circ}$  F. in the morning to  $101.2^{\circ}$  to  $102.2^{\circ}$  F. in the evening, with a pulse rate varying, independent of the temperature, from 98 to 124. No spots had been found upon the body, nor iliac tenderness, nor enlargement of the spleen, but at my initial examination the liver was noticeably enlarged and tender. The girl was dull, apathetic and peevish, and lay almost always in a stuporous condition, except when roused for food or medicine.

Five days administration of mixed treatment brought the temperature and pulse to normal and all pains in the legs and head left within a week. The hepatic tenderness has disappeared, and the enlargement at the present time (Dec. 1) is much less marked. The child is gaining flesh rapidly and the lassitude which characterized her moments for two months before her illness has been replaced by a lively, energetic disposition.

Parental history in this instance is negative. Neither mother or father shows any cutaneous lesions of an old syphilis and neither has had a primary sore that he or she knows of or will admit. The father tells me that when a boy his father had a necrosis of the tibia which the elder Pancoast operated on. This is absolutely the only clue to the existence of the disease in a previous generation, and but for the discovery of the Hutchinsonian sign in the child, the diagnosis of "typhoid fever" might have remained endorsed and followed.

It is the opinion of the writer that if evidences of syphilis were more often looked for in continued fevers of a doubtful character, or, as a chance, specific treatment given the patient, doubtful diagnosis would frequently be speedily made definite and the health of the patient and the reputation of the physician advanced in a gratifying manner.

**Mark Twain's Rules of Health.**—"When others drink I like to help; otherwise I remain dry by habit and preference. Since I was seven years old I have seldom taken a dose of medicine and have still seldomer needed one. I have made it a rule never to smoke more than one cigar at a time."

## A FEW OBSERVATIONS ON RELAPSING FEVER.

BY DR. KOCH,  
OF HONGKONG, CHINA.

RELAPSING fever is a condition that among ourselves (in Hongkong) is not often met with, though it seems common enough in some parts of India, as, e.g., Bombay. It is also, I understand, fairly prevalent in North China, but as far as I am aware is not met with in South China, nor in Hongkong. As a point of fact, these cases, whose history I am about to give you, were, I think, among the first actually seen there.

On January 10, eight patients were sent to the Hospital Hulk Hygeia from the immigrant ship Cranley which was en route to South Africa from Chin-wan-tao. Five of these cases were suffering from smallpox unmistakably. The other three had a high temperature, a quick pulse, intense backache, headache and general aching in the bones and joints, respiration was quickened, tongue dirty. It was thought that these were cases of incipient smallpox. Being, however, the seventh day of illness, and there being no definite evidence of the existence of smallpox, I thought it advisable to examine the blood. Numerous spirilla were found, and no malaria. They ran the usual course, and the spirilla were found every day in the blood, during the persistence of the high temperature.

*Course of Cases: Case I.*—Fever, seven days; remission, five days; fever, four days; recovery. *Case II.*—Fever, twelve days; no remission; recovery. *Case III.*—Fever, twelve days; remission, three days; sudden death.

I am unable to state exactly that the duration of the primary attack of fever was in each case accurate, because no information was supplied me by the ship authorities, and I had to rely upon the statements of the patients. The temperature in no case rose above  $105^{\circ}$  F. It was steadily elevated; was practically uninfluenced by antipyretics and quinine; and was slightly modified by sponging (cold), but temporarily. The treatment adopted was the administration of ordinary diaphoretics—antipyretics and quinine were tried, but without effect—and digitalis and strychnine were given as required.

The patient that succumbed suffered slightly from chronic bronchitis. He had passed through twelve days of fever, and was in the third day of his remission. He seemed to be doing well, was quite cheerful and lively, and ate a hearty breakfast; soon after that he succumbed to heart failure. His heart was slightly dilated, and its action irregular. On post-mortem examination no spirilla could be found in any of the organs or in the blood of the heart, which was found to be dilated, and there was evidence of chronic bronchitis. The spleen was enlarged and firm; the liver showed fine cirrhosis.

*General Symptoms.*—The high temperature, accompanied by severe backache and headache



and pains in the limbs and joints were most noticeable; the tongue became coated with a brownish fur, thick and moist at first, but becoming blackish and dry before the approach of the crisis, and beginning to clear immediately after. The pulse was quick, and tended to be dicrotic. About twenty hours before the crisis the respiration became much affected and was oppressive—was of a sighing nature—and the patient had an anxious expression, but this quickly subsided as soon as the crisis was past. The spleen was enlarged and tender, and the liver tender. The skin even in the Chinese was noticeably yellow, as was also the conjunctiva. The symptoms otherwise called for no particular comment, and were such as usually accompany elevation of temperature.

An important sequel in connection with these three cases occurred. Two cases remitted on January 14, the third on January 24; the office boy of the hospital, who saw the patients frequently and helped to coax mosquitoes to feed on them, but who never nursed them, was suddenly taken ill on January 30. He was a known malarial subject, and I had no reason to suspect that this attack was other than a malarial attack. His blood showed spirilla, and he passed through a typical attack of relapsing fever of a very severe nature. His fever fell on the sixth day; the remission lasted five days, and the relapse ten days. He complained of severe backache and headache; his tongue was very foul and flabby. Before the second crisis he suffered great distress of breathing and had a lively fear of impending death. Then the crisis occurred, and he got better. During his relapse, however, his condition was very serious. His tongue was foul, and the backache was severe. He had constipation at first, and later he developed a peculiar mental state; he was first apathetic, and then remained in a state of unconsciousness from which he could be aroused at intervals. Then diarrhea supervened. He was unable to restrain his motions, and his excreta were passed under him. The next day he became deeply unconscious and continued so for three days. During this time the blood, on examination, showed no spirilla, and the urine, which was centrifugalized, also showed no spirilla. He ultimately recovered.

These cases are interesting not only because relapsing fever is rare with us in Hongkong, in spite of the fact that in the North of China it is common, but also because the fourth case shows how easily and rapidly it is transmissible, and I venture to think points to a possible mode of transmission. The office boy used to assist in getting films of blood and in catching mosquitoes and trying to get them to feed on the patient. He never went near the patients at any other time, nor did he help in nursing them, yet he suddenly developed the disease.

The *Spirillum Obermeieri* is too well known

to require description. It is an organism of varying length, about 30 microns usually; is wavy on staining, and when seen alive is very active. Its movements are of a spiral nature, or of a lashing and sinuous kind. It is very transparent, and to be seen living requires a darkened stage. Its ends are pointed, and its substance stains uniformly. As to its nature, Schaudinn shows that the *Spirocheta Ziemanni* is a phase of a trypanosome, that it has a large nucleus and a micronucleus or blepharoplast, neither of which is present in a bacterial spirillum, and further that it alters its shape. He judges from analogy that the *S. Obermeieri* is a protozoan parasite and a phase of trypanosome. It is said to have cilia. Its mobility may be preserved for 30 to 130 days. It cannot be cultivated. Its presence in the blood is noticeable during the time the temperature keeps up, but its variation in number from time to time do not bear any relation to the elevation of temperature, although there is progressive increase till about twenty hours before crisis. As soon, however, as the temperature falls, no more spirilla can be found in the peripheral blood. What happens to them? Metchnikoff has shown that they are gathered in the spleen where they are destroyed by the microphages and macrophages, and this has been confirmed by the fact that monkeys, into whom relapsing fever blood was injected and in whom the spirilla were found in the peripheral blood, showed none after the crisis in the peripheral blood if the spleen was present, but abundance when the spleen was extirpated. It would then seem that the spleen was chiefly concerned in their destruction. On the other hand, Gabritchevsky states that bactericidal substances appear at certain determinate periods in the blood, and that then the spirilla are got rid of. The following experiments lead him to this conclusion:

1. To blood containing the spirochætæ he added blood taken immediately after a paroxysm—and the result was that the spirochætæ became immobile, changed form, and died.

2. To blood containing spirochætæ he added normal serum, and the spirochætæ lived from two to four days.

3. Preventive inoculation with serum of a convalescent case was effective to a certain extent.

The spirochætæ are not found in the blood of a patient who dies of relapsing fever, except in very rare cases. In my own case I could find nothing. What happens when they disappear, and where do they disappear? I grew them for eleven days in a solution of normal saline at a temperature of 37° C. They did not apparently increase in numbers, but they lived. On the twelfth day hemolysis set in, and on the thirteenth day only granular debris could be found on examination. Hence I conclude there is some bactericidal action of the blood which is produced as an antibody is, probably as a result of

some secretion of poison by these spirilla, and that in consequence they disintegrate, but without the accompaniment of hemolysis in the human body.

**Method of Conveyance.**—Bedbugs are reported to have conveyed infection to monkeys. Judging from analogy with malaria and filarial diseases, it seems quite possible, and I think I may say probable, that the spirillum is taken up by the mosquito and passed on. I have examined some mosquitoes twenty-four to thirty-six hours after allowing them to feed on two patients, but was not successful in finding spirilla in the blood. However, the question arises whether there might not be some early form in the human blood which we have not been able to recognize as yet. This idea is suggested by an experiment I made in which I injected a monkey with 2 c.c. blood from the patient that died, taken the day after the remission, which was the day before death. Examination showed no spirilla in this blood. The monkey showed no rise of temperature, but suddenly died in seventeen days. On examination of spleen, liver, heart-blood and lungs, numerous spirilla were found. Here it is worth notice that no spirilla were present in the injected blood, and none were seen in the examinations of the monkey, about the fifth and sixth days. But death supervened, and large numbers were found in the organs. It is quite consistent to consider that the spirillum exists in some form during one stage of its existence which we have not yet recognized.

I may also state that I scarified two monkeys and fed one pig with spleen, in which the spirilla were abundant: this had no result; no spirilla were recovered from the blood, nor were there any signs otherwise of their presence. Perhaps this would point to the correctness of Schaudinn's assertion that it is a protozoal organism.

I inoculated two rabbits with blood removed during the febrile period, which abounded with spirilla. No results followed. The blood remained free. It is, of course, known that monkeys are the only susceptible animals.

**Period of Incubation.**—In the office-worker's case it was not more than six or seven days; in three monkeys which I injected it was about four days. An extreme of 126 hours has been given, but it may be longer as in the above cases.

An important symptom is to be noted in the case of the office boy—namely, that for about three days he remained quite unconscious, and that examination of the blood showed the absence of spirilla. It appears to me that it is not improbable that they formed emboli in the small capillaries of the brain, especially as the unconsciousness came on fairly suddenly, and so were withdrawn from the peripheral blood.

**Treatment.**—The administration of carbolic acid in large doses was tried in Case IV, when there were brain symptoms. It is stated that 1 per 1,000 kills the spirilla. Therefore, as it is

known that carbolic acid enters the blood unchanged, gr. x every two hours were given. The patient recovered. He made a steady change for the better after the administration was commenced, but whether this was *post hoc* or *propter hoc* I am unable with this one case to say.

## MEDICAL PROGRESS.

### MEDICINE.

**Water Supply and Sewage Disposal.**—G. W. FULLER (*Journal A. M. A.*, Oct. 7) discusses the proposed use of copper sulphate for water purification. Its value as an algicide seems to be well attested, but its effect on drinking water is not yet fully determined, and a prudent course at the present time would be to keep water thus treated from use for such purpose. The quantity required for germicidal purposes is much greater than that for destroying algae, and this makes its use for drinking still less expedient till we have more trustworthy data as to its effects. The use of copper sulphate as a germicide for the effluents of coarse drain sewage filters is mentioned, but the process is an expensive one. The data regarding its use in connection with filtration are not yet sufficient. Altogether a judicious conservatism is advisable as regards copper sulphate. The extent of filtration works in the United States is next noted, and it appears that in the last four years there has been an increase of 70 per cent. in the population supplied with filtered water and a prospect of a still greater increase in the near future. The use of sulphate of iron and lime in treating the St. Louis water supply is mentioned, but it is not considered an altogether satisfactory substitute for filtration. The softening works at Columbus, Ohio, are also commented on as the first instance of a large city using this method in this country. Recent legislative measures in Pennsylvania and New York looking toward the control of water supplies are mentioned with approval. The latter part of the article is devoted to sewage disposal, and the conclusion is reached that intermittent sand filters, when available, are the most satisfactory. Coarse-grained filters and sprinkling filters are more or less effective and septic treatment is ordinarily helpful as a preparatory measure. The article concludes with a brief notice of sewage pollution of shellfish and its remedies.

**Diagnosis of Gastric Conditions.**—GEORGE DOCK (*Journal A. M. A.*, November 4) remarks that instrumental and laboratory methods are too much neglected in gastric diagnosis, and that the difficulties are overestimated. The failure to find absolute diagnostic signs, as in the case of the limitations of the HCl absence test in cancer, has perhaps also been discouraging to some. He points out the value of the HCl tests, not only in cancer and gastric ulcer, but in functional disorders, and with repeated examinations. Still further tests, nevertheless, are of great value, and he enumerates those of special usefulness to the general practitioner. For the primary reaction litmus should be used, and for presence or absence of free HCl. Congo paper or solution may follow; though this can be dispensed with. The more accurate and delicate Guenzburg reagent should always be used, and he does not understand its frequent neglect. The tendency of the solution to decompose, he admits, is a drawback, but it is so easy to test the solution with a drop of dilute HCl that this fault is a trifling one. Given free HCl, its amount is to be determined, and for this the dimethyl-amidoazo ben-

zole is most satisfactory, though practice is required to get the proper end reaction. For the total acidity the phenolphthalein reaction is used. With free HCl, tests for combined HCl are not needed in ordinary clinical work. If there is no free HCl the qualitative Sjöquist test should be used. Quantitative estimations of combined HCl are not needed in clinical work, and require too much chemical experience. With proper apparatus and reagents, any one can learn to estimate HCl sufficiently for diagnosis, and the quantitative tests can often be omitted. Of abnormal acids lactic acid is the only one requiring chemical tests; acetic and butyric acids can be detected by their odors when present in quantity. To be most useful, lactic acid tests should be made on a lactic-free test meal, such as shredded wheat or the Boas gruel. Quantitative methods are not required, as the relative intensity of the Uffelmann or Kelling tests gives sufficient indices. Pepsin determination is not needed in ordinary work, as it is rarely absent with the presence of HCl in sufficient quantities. The existence of the digestive functions and their completeness can be easily shown by the biuret and starch tests, and by the changes in the cells of the gastric contents as shown by the microscope. Some of the functional tests proposed by Stahl, however, may prove valuable aids in diagnosis. Chemical tests alone are of little value; they must be supplemented by others learned by practical observation and experience. One quickly learns the normal limits as regards color, consistency, odor, etc., and from these the need of further examinations becomes quickly known. Mucus is readily recognized, but it may have been swallowed; blood in large amount is also easy to see, and small amounts due to friction with the end of the tube are usually recognized with ease. The tests for occult blood are of considerable clinical value, but trauma must, of course, be excluded. Pus is always of importance, but it also may come from the respiratory tract. Microscopic examination of bits of mucosa and of bacteria, Dock things, have but a limited value. The presence of large numbers of bacteria may throw light on the question of stagnation, and certain variations of the flora may aid diagnosis. In conclusion he says that examination of the gastric contents cannot be neglected without the risk of serious error. It is indicated in all stomach syndromes, in all diseases seriously affecting metabolism and nutrition, and in all that affect the function of the stomach, notably diseases of the lungs, heart, liver, kidneys and blood.

#### Dilation and Curettement for Dysmenorrhea.—

GERRY R. HOLDEN (*Am. Med.*, Nov. 4, 1905) analyzes reports received from 95 patients at periods varying from one to twelve years after dilation and curettement for dysmenorrhea at the Johns Hopkins Hospital. He finds that 40 per cent. were entirely or very greatly relieved for at least one year, with 7 per cent. out of this 40 per cent. having a recurrence of the dysmenorrhea after one year or more; 30 per cent. had no relief at all, while the remaining 30 per cent. had but slight relief or relief for a few months only. Marked maldevelopment of the pelvic organs was present in 20 cases, and only 25 per cent. of these 20 cases were relieved. From a study of the character of the pains he concludes that the prognosis for relief after dilation and curettement is better when the pains are sharp, begin the day of the flow or the day before, and last but a day or two. The prognosis is bad when pains are dull, begin several days before the flow, and last for several days or throughout the flow. Dysmenorrhea may be caused by lurking pelvic inflammatory disease which is not recognized at pelvic examination under ether. The history

is significant in such cases. In these dilation, and especially curettement, may make the symptoms much worse. Neurasthenia, anemia or malnutrition are frequently present. In some cases such conditions are the cause of the dysmenorrhea. To get good results from the operation these conditions must also be cured. In 61 of the cases a microscopic examination of the curettings was made. Chronic endometritis in such relation as to be a possible cause of the dysmenorrhea was present in but 4 cases, hence Dr. Holden concludes that chronic endometritis is an infrequent cause of dysmenorrhea. As but 3 out of 20 sterile married women of this series in the child-bearing period conceived within a year after the operation, the value of dilation and curettement in relieving sterility does not seem great. In general, the procedure should be limited to cases in which there are no gross pathologic lesions, such as retrodisplacements, inflammatory disease of adnexia, or myomas, to account for the dysmenorrhea.

**The Exaltation and Reduction of Blood Coagulability by Therapeutic Measures.**—A. E. WRIGHT and W. ERASMUS PARAMORE present the results of a detailed study (*Lancet*, Oct. 14, 1905) of the accelerating or retarding action exerted by certain medicinal agents upon blood coagulation. The effect exerted by calcium chloride and milk were particularly observed, and, in addition, calcium lactate and magnesium carbonate were drawn within the scope of the investigation. The results obtained with calcium chloride show that with a single dose of 60 grains the coagulation time of the blood is reduced and that the full accelerating effect is achieved within the first hour after its administration. In some instances the ratio of reduction was as 1 to  $\frac{1}{4}$ , whereas in others the reduction amounted only to 1 to  $\frac{6}{7}$ . This shows the marked idiosyncrasy displayed by some individuals in the matter of absorption of calcium chloride. In view of this fact it became desirable to obtain an effective substitute. Experiments were undertaken with calcium lactate. The results, as in the case of calcium chloride, were very rapidly manifested. With a single dose of 60 grains the reduction in coagulability achieved is greater than that achieved with the same dose of calcium chloride. It would appear that the more satisfactory results obtained with calcium lactate are due to a readier absorption. The third series of observations relate to the effect produced by the ingestion of magnesium carbonate. As in the foregoing series, a 60-grain dose was administered. The evidence obtained showed that magnesium salts exert an effect which is quite comparable to that of calcium salts. This disclosure is of therapeutic interest in explaining the rationale of the employment of magnesium carbonate in the treatment of urticaria. Finally, experiments were conducted relative to the effect produced upon the blood by the ingestion of milk. It was found not only that the coagulability was increased, but also that it was associated with the presence of large quantities of calcium and magnesium salts. Needless to say, the exhibition of an exclusive milk diet, while of advantage in hemorrhage, aneurysm, physiological albuminuria, and Bright's disease, is prejudicial in many other conditions, predisposing from its excess of salts to thrombosis.

**Bilharzia (Schistosoma) Hematobium.**—CLAUDE A. SMITH (*Am. Med.*, Oct. 14, 1905) reports seven cases found among the Boers and the South African negroes who were with the Boer War Spectacle at St. Louis during the World's Fair, and who also appeared in Atlanta during March of the present year. Out of 45 specimens of urine examined the eggs of the *Bilharzia hematobium* were found in seven. It was not possible



to examine more than the 45 specimens on account of the short time the company remained in Atlanta, but many other members of the company gave histories indicating that they might harbor the parasite. The seven cases were apparently chronic, as macroscopic inspection did not indicate the presence of any blood clots in the urine. Dr. Smith directs attention to the fact that the eggs are more or less cylindric, one end being bluntly rounded, while the other runs to a point or "spine," and that the egg is not a flattened body, as it appears to be when first viewed under the microscope. A description is given of the anatomy of the embryo and the hatching of the egg, the rupture of the shell apparently being due to the change in specific gravity of the fluid surrounding the egg. In conclusion, the question is raised as to the advisability of permitting such a number of cases of this disease to drift about this country when there is uncertainty as to the possibility of contaminating our streams with this parasite, especially in view of the fact that we have no remedy for this disease.

**Aneurism of the Abdominal Aorta.**—In conjunction with a full and lucid description of this disease WILLIAM OSLER (*Lancet*, Oct. 14, 1905) tabulates analytically 16 cases. These 16 cases occurred among about 18,000 medical cases admitted to the Johns Hopkins Hospital; however, the incidence varies in different localities. The ratio of abdominal to thoracic aneurism was about 1 to 10. Of the 16 cases, 14 were males and 2 were females, which fact agrees with all statistics. Nine patients were under forty years of age. Seven had been heavy workers. Nine gave a definite history of syphilis; four others doubtful. Ten were alcoholics. In 12 the aneurism was saccular, in three diffuse, and in one dissecting. In two patients the condition was latent. Persistent, agonizing pain was present in thirteen, and is usually the first indication of the trouble, usually being due to pressure upon or stretching of nerves, erosions, or rupture with diffusion of blood. Nausea and vomiting were early and severe symptoms in two cases. Hematemesis was not observed. Constipation was a common feature. Intermittent claudication occurred in one case. The patients were usually well nourished and healthy-looking. Hemorrhage from the bowels occurred in one case. Pressure may lead to dilatation of the stomach or esophagus. The obscurity of the symptoms is universally recognized. Diagnostically, pulsation or throbbing, evident to the eye of the observer, or felt by the patient, is the most obvious feature of the disease, but it is to be borne in mind that abdominal pulsation occurs in other conditions, as nervous or hysterical females or in neurotic or hypochondriacal males, tumors, anemia and aortic insufficiency. A mistake is not likely to occur if it is remembered that no pulsation, however forcible; no thrill, however intense; no bruit, however loud—singly or together—justify the diagnosis of an aneurism of the abdominal aorta, only the presence of a palpable, expansile tumor. Among other causes which may suggest aneurism are, regurgitation into the inferior vena cava and a very sclerotic aorta with a thin abdominal wall in old men. So far as treatment is concerned it is not to be expected that much can be accomplished toward a cure. The various medical and surgical measures were applied in this series with an almost universal negative result.

**Hemorrhagic Typhoid with Typhoid Parotitis.**—B. D. BLACK (*Am. Med.*, Oct. 14, 1905) reports a case, ending in recovery. The patient gave a history of an arrested pulmonary tuberculosis; no hemophilia or syphilis; total abstainer. Hemorrhages occurred about the seventeenth day of illness. Intestinal oozing was

followed by oozing from mouth, throat and nose, hematemesis, hemorrhage from bladder and urinary tract, purpura involving right leg and pressure points on posterior surface of body. Multiple hemorrhages for eleven days. A complicating parotitis seemed to have a marked effect on the hemorrhagic tendency. Medication is unsatisfactory, but saline solution is indispensable, as it renders the typhoid toxins less virulent and fills up the vessels. Camphorated oil as a last resort when other stimulants failed, was given hypodermically, P. R. N., 15 to 30 drops. Its action was satisfactory. The literature on the subject is not exhaustive. This form of typhoid is rare and very little light has been thrown on the etiology by the recent advances made in blood pathology. Tuberculosis cachexia (although not apparent) was possibly a causative factor in the case reported. A review of the literature and study of the case would suggest the following conclusions: (1) The hemorrhagic tendency in typhoid is probably increased by the fairly constant leucopenia which exists in uncomplicated cases. (2) The hemorrhages are usually by diapedesis in this form of typhoid. (3) As a result of the bacilleemia, toxemia or both, a degeneration of the intima of the vessels takes place, a pathologic permeability of the vessel wall resulting. (4) The development of an acute inflammatory process (in this case a parotitis), with resulting leukocytosis, has a decided effect on the hemorrhagic tendency.

**Pulmonary Atelectasis in Adults.**—Contrary to what is usually taught and believed, WILLIAM R. HUGGARD claims (*Brit. Med. Jour.*, Oct. 14, 1905) that atelectasis in adults is extremely common at the apex. In order to elicit the physical signs of this condition a change in the orthodox order of examination is indispensable, since the deep breathing demanded during inspection clears away or diminishes the evidence sought. This is shown by the fact that if percussion is employed before and after deep breathing dulness will often be observed over the apex of the lung at the first percussion, whereas a clear note is elicited at the second. The usual physical signs in this form of atelectasis are dulness, with feeble breath sounds, the dulness diminishing or passing off after a few breaths, the breath-sounds at the same time becoming more distinct. A few stick râles can often be heard toward the end of the first few deep breaths, but they gradually get fainter, and then disappear. Most frequently pulmonary atelectasis is found, first, from the apex to the second interspace in front; next, the suprascapular, and then the interscapular region. The treatment of the condition *per se* is systematic deep breathing and exercise.

**Professional Responsibility in the Care and Diagnosis of Insanity.**—ARTHUR C. BRUSH (*Am. Med.*, Oct. 14, 1905) emphasizes the fact that it is becoming more and more imperative for the physician to detect abnormal mental processes in the young and to advise proper mental and physical means for their correction. He must be particularly conscientious in advising the family when restraint by means of commitment as an insane person is necessary, or when a committee is necessary to take charge of the affairs of a person incapable of managing either through insanity or other causes.

**Confusional Insanity.** L. D. H. BAUGH brings forward some clinical facts (*Brit. Med. Jour.*, Oct. 14, 1905) bearing upon the confusional insanities accompanying or following toxic causes, such as sepsis, fevers, alcohol, the puerperium and lactation. The observations are based upon a series of 47 cases. The mental symptoms are a purposeless resistiveness, confusion, absence of emotion, and a facial expression of embarrassment. The physical symptoms are cutaneous vasomotor

changes, leucocytosis, the presence of indoxyl in the urine, and symptoms proper to the physical ailment. Resistiveness, confusion and expression of embarrassment were present in all 47 cases. Emotion was absent in 32 of the 47 and in the remaining 15 was only occasionally present, and then merely for short periods. In 33 cases in which a count was made a leucocytosis of over 9,000 was present in 24. Indoxyl was tested for in 19 cases only, and in all these was present in excess. Persistent pallor unaccompanied by any changes in the erythrocytes was present in 23 cases, and in 20 of the 23 the skin was dry and rough. Twenty-four cases showed a persistent flush; in 15 of these the skin was dry, and in 9 moist. The relationship of such physical and mental conditions ought to be regarded as the phenomena of cause and effect. Points to be particularly noted are: (1) The leucocytosis present in the majority of cases examined is indicative of toxemia. (2) The marked presence of indoxyl in the urine is proof of putrefactive absorption from the intestinal tract, and is an evidence of auto-intoxication. In the majority of cases the toxins act on hereditarily predisposed nervous systems. This, it appears, is brought about in one of three ways, viz., (1) directly through the blood or lymph channels; (2) more indirectly, probably through auto-intoxication; (3) still more indirectly, where nerve changes appear secondary to arterial changes.

**Frequency and Etiology of Acute Non-Tuberculous Pneumonia in a General Hospital.**—WILLIAM TRAVIS HOWARD, JR. (*Am. Med.*, Oct. 28, 1905) based his study upon a series of 550 consecutive autopsies, which cover a period of about seven years. All doubtful cases and all cases of simple bronchitis are excluded. The diagnosis in every case is based upon microscopic as well as macroscopic examination. The pneumonias are classified according to the usual custom into croupous or lobar, and broncho or lobular. The 550 consecutive autopsies furnish 195 instances of acute non-tuberculous pneumonia, an incidence of 35 per cent. to 45 per cent. Of these cases, 76, or about 61 per cent., occurred in individuals with acute infectious processes. Of 43 autopsies in typhoid fever cases in this series, 22 had bronchopneumonia and 5 croupous pneumonia. Of 81 cases of peritonitis from all causes, 36, or 44 per cent., had pneumonia. The article contains a number of tables explanatory of the various bacteria present and the diseases in which they occurred.

**Mode of Infection in Uncinariasis.**—An interesting experiment, proving how the uncinaria may gain access to the human body, has been made by C. A. SMITH (*Jour. Am. Med. Ass'n.*, Oct. 14, 1905). A small amount of sterilized soil was mixed with infected feces and then applied to the arm of a patient. The first applications were negative, but after eight days, when all the larvæ had been hatched, a decided dermatitis, with swelling of the entire arm and hand appeared. The feces were examined regularly after this, and by the middle of the sixth week the eggs of uncinaria were found. There can thus be no question that the disease may and probably very often is contracted through the skin. Infection with the finger nails was impossible in this case, since the eruption was always carefully bandaged.

**A Philippine Fever.**—Two cases of a somewhat temporary febrile affection suggesting typhoid or malaria and the discovery of a peculiar organism associated with it are reported by H. D. BLOOMBERG and J. MORGAN COFFIN, assistant surgeons U. S. A. (*Journal A. M. A.*, Oct. 28). The fever was accompanied with general malaise, and in one of the cases with marked muscular pains. It started with chills, but sweats were lacking. The organism was found in the red blood cells. It is

a motile hemocytozoon, approximately 2.5 microns long, 1 micron broad, unpigmented, and refractive, like the malarial parasite. Its movements are of two kinds, the first depending on its rotation on one or other of its two axes, and the other in independent movement from one position to another within the cell. The motion ceased after several hours observation and in specimens kept over night a few narrow ring-shaped bodies were found. This parasite was probably first described by Asst. Surgeon H. M. Smith, U. S. A. (Surgeon General's Report, 1904), and the reason it has not been more generally recognized in the peculiar transient fever that occurs in some portions of the Philippines without the presence of the malarial parasite, is its small number in the blood. Smith's cases were reported under the head of estivomalarial fever, though he remarks on the peculiarities of the organism and its possible distinctness.

## OBSTETRICS AND GYNECOLOGY.

**Toxemia of Pregnancy with Vomiting.**—The closer investigations of the symptoms, course and pathological lesions of eclampsia and hyperemesis gravidarum, has shown that they have a common origin in a state of intoxication, always accompanied by functional incapacity of the liver. To this hepatotoxemia is ascribed hyperemesis gravidarum, puerperal neuritis, eclamptic toxemia and perhaps gestatory psychoses. It is also believed that gastric disorders, headache, certain skin lesions and other minor disturbances of pregnancy may be referred to a similar source. E. McDONALD (*Am. Jour. Obstet.*, September, 1905) has made an extensive review of the literature on this subject to show (1) the identity of the liver lesions of toxemia of pregnancy with vomitic and eclamptic toxemia, and for comparison of these lesions with those of experimental liver necrosis; (2) the frequency with which acute yellow atrophy occurs, and (3) the presence of more marked toxic symptoms. The writer reports the case of a woman primipara, aged thirty-six years, who vomited almost continuously when three months pregnant. At four months a physician was called, as the vomiting had not abated. After several days of rectal feeding and cocaine by mouth, the patient was curetted without anesthesia. A week later the writer took charge of the case. Vomiting had continued; temperature, 99° F.; pulse, 140; there was slight jaundice, limitation of field of vision, no abdominal tenderness. The urine was scant, of high specific gravity and contained a large amount of albumin, casts, leucin and tyrosin. The patient improved somewhat on rectal salines, peptonized milk and predigested beef by the bowel. Six weeks after the first operation a neuritis appeared in both legs, marked mental symptoms being present at the same time. Owing to occasional vomiting and a progressive rise of temperature a second curettage was performed under ether anesthesia, and a placental mass with membrane remnants was removed. The vomiting ceased, but complete power in the legs had not returned after twelve months. The review of these cases would tend to emphasize the fact that a very large percentage of all cases occur in primipara, and that the disease is at its height at three to four and one-half months. Esophageal pain is frequent and when present with coffee-ground vomit, due to disorganized blood, denotes a serious condition. Of the theories of eclamptic toxemia based upon a biochemical foundation, Viet assumes that the excessive influx of placental elements into the maternal circula-



tion leads to the production of a cytoplasm, which causes the morbid conditions. Ascoli supposes that the pathological changes and symptoms are due to this lytic substance when it is produced in excess of the amount necessary to counteract the invasion by fetal elements. Weichardt supposes the formation of a poison by the dissolution of placental elements which is normally neutralized by an antitoxin; when the antitoxin is absent or deficient, the poison gives rise to eclamptic toxemia. Dienst ascribes importance to the action of the mother's blood serum upon the red blood corpuscles of the child. After elaborate experiments he concludes that the condition of eclamptic toxemia is due to this agglutination and hemolysis, and that this can occur only when there is a free communication between mother and child. Pearce has produced necrosis of the liver, experimentally, by the intravenous injection of hemagglutinative sera in animals. There is evidence that in the toxemia of pregnancy an agglutinative substance occurs in the blood, and that this, by clumping of red cells, may cause liver necrosis. The hemagglutinin is probably not formed in the fetus, for symptoms of toxemia have persisted after the expulsion of the fetus, and a case is on record where eclamptic toxemia occurred in connection with a four and one-half months' hydatiform mole. There is no proof at present that such a hemagglutinin is produced by the placental cells.

**Vaginal Cæsarean Section.**—Dr. J. B. DELEE (*Chic. Med. Rec.*, September, 1905) gives the following indications for rapidly evacuating the icterus: (1) Eclampsia; (2) heart disease; (3) placenta prævia; (4) Abruptio placenta, premature detachment of the normally placed placenta; and (5) asphyxia in utero, from abruptio of the placenta, prolapsed cord, or prolonged labor. The author recommends the following procedures for dilating the closed cervix in these cases: (1) The use of rubber bag dilators, as the Barnes and its modifications, and the colpeurynter. (2) Manual or digital dilatation, by the Harris method. (3) The instrumental dilator, of which the Bossi is the original type. (4) Incisions in the cervix, either multiple small incisions, the ancient method, or deep lateral incisions, Dührssen's method, or crucial incisions. (5) The methodical incisions invented by Dührssen and given by him the name vaginal Cæsarean section. (6) Abdominal Cæsarean section. Regarding all the five methods of enlarging the cervix it must be said that nearly everything depends on the degree of effacement. The author gives the indications for vaginal Cæsarean section as follows: First, when the cervix is tightly closed and an indication arises for immediate delivery; and second, when the cervix is pathogenically altered and nature is not able to overcome the obstruction.

**Malignancy in Uterine Myomata.**—Some authors describe a form of malignant degeneration in myomata, whose starting-point is the muscle cells. It is called leiomyoma malignum and described as being distinguishable from sarcoma of the uterus. H. F. Lewis (*Am. Jour. Obstet.*, Oct., 1905) considers it unprofitable to try to distinguish malignant diseases of the mesoblastic type in the uterus as malignant myoma and as sarcoma. The dividing line is vague, the same tumor, in parts not widely distant, may show varying proportions of young muscle cells, spindle cells, large round cells, small cells and polynuclear cells. All of these tumors are malignant, in that they tend to recur, to grow rapidly, to become necrotic and to form metastases. They are

consequently all sarcomata. A fibromyoma of the uterus is composed of smooth muscle fiber, differing but slightly from that of the uterine wall, and of connective tissue bundles, a true myoma existing only at the earliest stages of the growth. The tumors, composed mostly of muscle tissue, are more prone to malignancy than those chiefly made up of connective tissue. Williams recognizes a myoma sarcomatodes, springing from the muscle cells of a fibromyomatous tumor, and a myosarcoma, a mixture of myomatous and sarcomatous cells, due to sarcomatous changes in the connective tissue elements. Weir would add a third class, resulting from changes in the connective tissue of the uterine wall, without previous existence of any myomatous tumor. The writer would add a fourth class, a sarcoma arising in the connective tissue of the endometrium of body and cervix, the majority of uterine sarcomata being of this variety. The signs of sarcomatous change in a fibromyoma of the uterus are sudden rapid growth and softening, casting off of necrotic tissue (if the growth is submucous) and early cachexia. Carcinoma is a more frequent accompaniment of fibromyoma than sarcoma, although an etiological sequence can be more frequently traced in fibromyoma and sarcoma than in fibromyoma and carcinoma. It has been found that malignant disease is a rarer form of complication of fibroids in the cervix than in the body of the uterus. Inasmuch as the signs and symptoms of the presence of malignant disease are not quickly distinctive, the writer believes that every fibroid of the uterus should be operated upon as soon as the diagnosis is made, except small ones in cases in which the patient can be examined at frequent intervals.

**Is the Treatment of Sterility Justifiable without Examining the Sperma of the Husband?**—PINCUS (*Monatssch. f. Geb. u. Gyn.*, August, 1905) cautions against the tendency among gynecologists to go ahead with the treatment of sterility on the assumption that it is due to the woman. In every case, he believes, the husband should be questioned as to his power of having intercourse and a careful examination of his sperma should be made. This search for spermatozoa should be made several times, and at rather long intervals, during which time the person is to abstain from intercourse, since it is well known that a temporary azoospermia occurs after repeated coitus. Pincus reports concerning 483 cases of sterility, in 58 of which he found absence of spermatozoa. In nineteen of these cases the wives had been under treatment. Furthermore, he found in 37 instances persistent oligospermia and 13 times necrospermia.

**Calcification of Uterine Fibromyomata.**—The important etiological factor in the calcification of uterine fibromyomata is age. G. PIQUAND (*Ann. de Gyn. et d'Obstet.*, June, 1905) states that the condition occurs after the menopause, most frequently in interstitial and sub-peritoneal types. It is rare in polypi and in submucous fibroids. The calcareous nodules may start at the periphery or center of the growth, gradually increasing in size until there is nothing left but a calcareous mass surrounded by a capsule. A fatty degeneration may precede the calcification. The uterine arteries become thickened and atheromatous. The chief symptoms are pain, previously absent, compression of bladder or rectum, metrorrhagia or leucorrhœa. The change in hardness may sometimes be appreciated by palpation. If the condition is unrelieved by operation, a



frequent termination is ulceration through the wall of rectum or bladder.

**Puerperal Fever, as Seen by the General Practitioner.**—Puerperal fever has always been a great danger to the parturient woman. F. L. GLENN (*Chic. Med. Rec.*, Oct. 15, 1905) reports several cases from his private practice and writes on the subject extensively. He arrives at the following conclusions: (1) If there occurs at any time following the birth of the child, or miscarriage, a temperature of 101° F. or over, with no apparently assignable cause, a thorough examination of the perineum and vagina should be made. (2) If the examination of the perineum and vagina give negative results, the uterus should at once be examined by using a dull curette, and if any blood clots or placental tissue are discovered, they should at once be removed by the finger or curette and the uterine cavity douched with some mild antiseptic solution. (3) If the temperature and pulse return to normal after one curettement, there is no indication for its repetition. (4) If the temperature is partially reduced following the curettement, the uterine douche alone should be continued from one to four times a day, depending on the severity, or until the temperature goes to normal. (5) If the chills persist and the temperature remains high after the curettement, I would repeat it once daily until the temperature is reduced or until nothing can be secured from the uterus but bright red blood. (6) In my experience the majority of cases are immediately checked by one curettement and the temperature drops to normal in a few hours. (7) That puerperal fever following abortion has proven more serious in my hands than that following a full-term confinement. (8) That chills during the puerperal period do not necessarily indicate septic poisoning from any source. (9) That the use of a rubber glove on the hand during the examinations would lessen the liability of carrying in infection. (10) That the use of a bed pan in the reclining position is not for the best interests of the case, but instead, the patient should be assisted to an erect position to urinate and for bowel movements, and in this position drainage is assisted.

**Dermoid Cysts.**—G. SNEGUIREFF (*An. de Gyn. et d'Obstet.*, May, 1905), after describing a case, states that dermoid cysts have been found near the orbit, at the base of the skull, in the bladder, but most frequently in the genital organs. They are called dermoid cysts when composed of epidermic structures alone; when they are derived from all three layers of the embryo, they have been termed embryomata. As to the origin of these structures, the theory of parthenogenesis is that the cells of the feminine ovule are capable of forming tissues. The writer believes that fecundation is essential to the formation of an embryoma, in that a tissue organized on the normal type presupposes the union of cells of heterogeneous individuals. These growths form about 14.5 per cent. of cysts; they have no tendency to become carcinomatous. The most frequent complication is probably sclerocystic degeneration of the ovary.

### THERAPEUTICS.

**Physostigmine in Intestinal Paresis.**—A short time ago atropine was praised highly in all cases of intestinal obstruction depending upon paresis of the intestines. P. RODARI (*Correspbl. f. Schweiz. Aerzt.*, Sept. 1, 1905) believes, however, that physostigmine is still

more suitable for such cases. In one instance where operation was refused he gave atropine without the slightest effect. The patient was getting weaker and weaker, but after a subcutaneous injection of half a milligram of physostigmine, rapid improvement set in. In some cases it will be necessary to give as much as one milligram. The drug is not suited for children, but does good service if given by mouth for nervous flatulency and atonic meteorism.

**The Anti-Emetic and Eupéptic Action of Citrate of Soda.**—M. G. VARIOT (*Bull. de la Soc. de Pédiatrie de Paris*, June, 1905) enthusiastically reports his happy results in arresting the vomiting of infants either breast fed or artificially nourished, and also in favoring digestion in certain cases, by means of citrate of soda. He recommends the following formula:

R Sodii Citrat.....	5.00
Aq. Destil.....	300.00

M. S. One dessertspoonful to one tablespoonful before each nursing period, or mixed with the bottle. The citrate of soda should be freshly prepared by the interaction of bicarbonate of soda and citric acid in definite proportions.

**An Antitoxic Serum for Erysipelas.**—The experience of Dr. Fornaca, of Turin, in the application of antitoxic therapy to erysipelas is favorably commented upon by Dr. ROCHARD (*Bull. Gén. de Therap.*, Sept. 8, 1905). The former used the blood-serum obtained from patients convalescing from erysipelas. The doses used were generally 10 to 30 c.c., sometimes 68 to 90 c.c., hypodermically. Nine cases were thus treated, including erysipelas of the face. As the result of this form of medication, headache, delirium, and hallucinations disappeared, the appetite improved, and the temperature fell in the majority of the cases. Whenever albuminuria was associated with the erysipelas, the antitoxin caused the disappearance of the former.

**Alypin in Diseases of the Eye.**—Alypin, the new anesthetic, seems to be adapted particularly for the treatment of diseases of the eye, according to H. KÖLLNER (*Berl. klin. Woch.*, Oct. 23, 1905). A single drop of a 5 per cent. solution will cause a more marked anesthesia than the same amount of cocaine and the internal muscles of the eye are not affected. The intra-ocular pressure is not influenced and the vascular contraction seen with cocaine does not occur. In most cases the anesthesia is very rapidly complete, and the absence of mydriasis and disturbance of accommodation is very often a decided advantage. Very large amounts may cause exudations into the cornea.

**Medicinal Treatment of Appendicitis.**—The confusing dissensions of opinion as to the proper time for operation in appendicitis are settled in a simple manner by P. MOOSBRUGGER (*Müsch. med. Woch.*, Sept. 12, 1905), who advocates the medicinal treatment alone. In mild cases, he merely applies flaxseed poultices and administers 15 grains of collargol in six ounces of water, a tablespoonful every half hour. In more severe cases, the dose is increased to 30 grains in six ounces of water, 2½ drams every hour, and ungt. Credé is applied locally. The drug may also be given per rectum where vomiting interferes. A cure is claimed even where peritonitis has already set in, and of a large series of cases only two were lost since the peritonitis had already advanced too far when the patients were seen for the first time. Surgical intervention is only indicated where there is general peritonitis, and in these cases it is advisable to establish an artificial anus and also to give large doses of collargol. This drug is harmless even if applied in very large doses.

# THE MEDICAL NEWS.

A WEEKLY JOURNAL  
OF MEDICAL SCIENCE.

COMMUNICATIONS in the form of Scientific Articles, Clinical Memoranda, Correspondence or News Items of interest to the profession are invited from all parts of the world. Reprints to the number of 250 of original articles contributed exclusively to the MEDICAL NEWS will be furnished without charge if the request therefor accompanies the manuscript. When necessary to elucidate the text, illustrations will be engraved from drawings or photographs furnished by the author. Manuscript should be typewritten.

SMITH ELY JELLIFFE, A.M., M.D., Ph.D., Editor.  
No. 111 FIFTH AVENUE, NEW YORK.

Subscription Price, including postage in U. S. and Canada.

PER ANNUM IN ADVANCE . . . . .	\$4.00
SINGLE COPIES . . . . .	.10
WITH THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, PER ANNUM . . . . .	8.00

Subscriptions may begin at any date. The safest mode of remittance is by bank check or postal money order, drawn to the order of the undersigned. When neither is accessible, remittances may be made at the risk of the publishers, by forwarding in registered letters.

LEA BROTHERS & CO.,

No. 111 FIFTH AVENUE (corner of 18th St.), NEW YORK.

**SATURDAY, DECEMBER 9, 1905.**

## THE HEALTH INSPECTOR VERSUS THE PRIVATE PRACTITIONER.

NOTHING but unstinted admiration should be accorded the magnificent system of health inspection evolved by the New York City Department of Health. Still in process of development, it has already accomplished an extraordinary amount of work, and has served as a splendid model for many other cities, both in this country and abroad. It is surprising that the vast increase in the powers vested in the officials of the Health Department has been accompanied by such a small amount of friction with the general public and with the members of the medical profession. It is to be expected that the operation of the complicated machinery of public administration should reveal a number of minor imperfections. In this respect the system of health inspection is not perfect. There are few men in active practice, particularly among the poor, who may not recall some instance of vexatious conflict with the Health Inspector. It may not seem out of place to investigate the opportunities that make such conflicts possible, and to suggest the proper remedies for their elimination.

This subject has recently been ventilated in the editorial columns of the *British Medical Jour-*

*nal*, and it is interesting to note that the same problems confront the medical profession abroad as obtain in this country. The main evil that has grown out of the system of health inspection is the occasional pernicious meddling with the duties and privileges of the regular medical attendant. It is time that the voice of the profession should be lifted in no uncertain tones against the offenders. The physician should understand his rights and prerogatives and should vehemently protest against their invasion. Supine indifference in this respect is an evil of equal magnitude.

With justice to the Department of Health it may be said that the rules guiding health inspectors prohibit any criticism in the presence of the family, of the diagnosis, treatment, or attitude of the attending physician. That such criticism is frequently made, few busy practitioners will venture to deny. In many cases it never comes to the knowledge of the medical attendant, and in other instances in which it cannot be directly proved, it may be inferred by a changed attitude in the patient's friends or by a subsequent loss of prestige of the practitioner. Such criticism might be dismissed as flip-pant if it did not come from one who is really a fellow practitioner. The cultivated portion of the community may properly ignore and will frequently resent such impertinent interference with the duties of the family physician, coming usually from one whose qualifications and experience may be vastly inferior. The medical inspector may occasionally forget that even his badge of authority does not make him less amenable to the ethical code. A competitor of the private physician, the health inspector may even prostitute his official capacity to his own professional advertisement. This possibility has been realized, unfortunately, too many times, having been practised by unscrupulous inspectors among the unintelligent population of the tenements.

That such grave violations of the rules of an otherwise exemplary department of the public service should occur is the natural consequence of the vicious method of appointment that has prevailed in former days. When political "traction power" rather than personal qualification was the main consideration in making up the staff of medical inspectors, little wonder that unworthy individuals have crept into the service. It is to the nonchalant attitude of the pro-

fession at large that many such parasites of a generally efficient and honorable corps of inspectors still find opportunity to practise their nefarious vocation. It is to be hoped that an awakened vigilance will uncover every such iniquitous and illegal action and that the guilty members of the inspection staff will be summarily dismissed from the department.

There are numerous occasions for misunderstanding and unpleasantness to arise between the inspector or diagnostician of the department and the private physician. This usually hinges about some difference of opinion as to the diagnosis of a particular case, which, as long as it is not brought to the attention of the patient's family by the health officer, does not actually infringe upon the rights of the practitioner. A specific case may serve to clearly illustrate this fact: A physician is called to see a patient, giving a typical history of scarlatina, and in which the eruption has already entirely disappeared and the desquamation is far advanced. He reports this case to the department as scarlet fever, and two days later an inspector is sent. The latter questions the parent as to the history of the case. Now it is well known that there is a tendency, particularly among the ignorant, to conceal, and even to distort, facts, when confronted by the health officer. This is an unfortunate circumstance, but it is real, and has to be reckoned with by all officials of health departments. The inspector naively accepts the history of the case as presented by the mother as true, being told that the child has only been ill for a few days, that it had no rash, and that she is surprised that the attending physician has reported the case as scarlet fever. The inspector makes his examination, finds no evidence of desquamation, and concludes that the parent is right. He forgets, however, that in mild cases the desquamation may be slight, and that frequent inunctions and bathing may make it scarcely perceptible. He accordingly reports his conclusions to his superiors, and an expert diagnostician is sent to verify his findings. The latter is presented with the same facts as to the history as his predecessor, and also reaches the same conclusion. The attending physician is accordingly notified that the department does not consider the case as one of scarlet fever, but is willing to technically quarantine it as such if the physician so desire. The latter, already convinced as to the correctness of his diagnosis, will, of course, emphatically

insist that this be done. Moreover, he cannot help feeling some resentment toward the inspector and the diagnostician who have accepted the word of the parent without consulting the original medical attendant, who may be assumed to have some ground for reporting the case as scarlet fever. Now, even if nothing has been said to the parent to indicate that there is a difference of opinion, it does not require more than a limited intelligence to suspect that the repeated examinations indicate that the family doctor is in some way at fault. It is quite probable that the inspector or diagnostician will have dropped some hint that the physician mistook a heat rash for scarlet fever.

Dispassionately viewing the results of the entire controversy, one readily observes that the Department of Health has gained nothing, while the physician has lost the good opinion which the family may have had as to his ability and skill. Is it desirable that the department should take such pains to verify or overthrow the diagnosis of the physician who has conscientiously reported a case of one of the common contagious diseases, in view of the fact that the physician will ultimately insist that his diagnosis be officially upheld?

In order to prevent these unpleasant clashes of authority two remedies suggest themselves. First, the Health Department may accept as bona fide the diagnosis of the attending physician and, provided the case does not require removal to a contagious disease hospital, may take no further concern in the case than to note by occasional inspection that quarantine is being properly maintained. In this manner all the requirements of the sanitary law may be fulfilled, and at the same time there can be no occasion for offending or injuring the family physician. Second, if a diagnostician must be sent to see a particular patient, let him first communicate with the physician in attendance, obtaining from the latter the true facts about the patient, or arranging for their joint presence at the examination of the patient. In this manner the danger of offending the delicate susceptibilities of the physician is reduced to a minimum.

It must be admitted, in justice to the Health Department, that the latter is obliged to contend with many circumstances which are beyond its control. Rules alone are not sufficient to control the numerous personnel of the department, and occasional lapses from proper conduct are to be



expected, as in all other large governmental or municipal departments. Moreover, it is unfortunate that a great deal of deception and evasion has to be reckoned with among the members of the medical profession. Every one knows that many cases of contagious, not to speak of merely communicable disease are not reported. Besides, the amount of deliberate falsehood encountered among those with whom the department is obliged to deal, is astounding. If to these embarrassments be added the difficulties associated with the enormity of the task it has to perform, with an inadequate force at its command, one can readily account for the irregularities and deficiencies in this important branch of the public service.

Within recent years the administration of the New York Department of Health has been singularly wise and efficient, and there has grown an increasing regard for the rights and convictions of private physicians. Indeed, the wide extension of the system of reporting communicable diseases has made it imperative that the department should gain the full confidence of the profession at large. Only in such a way can the praiseworthy efforts of the department meet with any degree of success. It is to be hoped that an improvement of the ethical standard among many of the inspection staff will serve to further stimulate the cooperation of the large body of practitioners. The result will be that the number of unreported cases of communicable disease will become smaller and smaller, and will finally almost vanish entirely.

#### WHAT NEXT?

"WHERE did you learn to play golf, Mr. Sapley?" "Why, here on the links, Miss Sharpe." "Really? I thought it must have been at a correspondence school!"

Now that is a joke, classified as such in the funny column, but we are asked to take in all seriousness the advertisement of a correspondence school of nursing. It appears in a highly reputable paper, a modest little notice offering to send literature upon request, and embellished with the picture of a pretty girl in the traditional cap and uniform, pouring out medicine. The hopeful aspirant for similar prettiness and uniform, who duly writes for the promised information, is rewarded with a specious little pamphlet and a confidential letter, both setting forth

in many a suave phrase the profits and pleasures of a nurse's life, and striving to create the conviction that the royal road to all this is through the aforesaid school. To make matters run more smoothly, the school has adopted a name which has been for some years associated in the popular mind with genuine and successful instruction by correspondence in various branches.

Nursing is described as "an uncrowded, lucrative, womanly vocation," which does not "unsex" the one who practises it, and a few glittering generalities as to the noble calling which "has always attracted true-hearted and whole-souled women" are skilfully spread over its difficult and disagreeable features, cleverly interspersed with allusions to the large wages to be expected, as a bait to those more susceptible to motives of gain than to visionary ideals. Single sentences from authoritative sources are quoted with the inference that they apply to nursing as taught by correspondence, when in fact they were spoken of the profession in general or of the training acquired in a hospital course; and emphasis on the necessity of a theoretical training is made to seem absolutely inimical to the practical side.

With an ostentation of frankness the possible question as to the value of a correspondence course is taken up and discussed as indicated above, and doubtless many may read these smooth pages without realizing that an argument for a ten weeks' hospital course for those who cannot take more does not apply to the case in hand in the slightest degree.

The whole thing is admirably calculated to construct in the mind of the unthinking or the credulous a roseate picture of spending leisure moments in easy study and ultimately blossoming out, in the desired uniform, into a phenomenon of intelligence, tact and courage, who shall be adequate to every demand upon her, and earn the enthusiastic gratitude of family after family where her presence has brought relief and joy—to say nothing of rapidly amassing a competency.

No qualifications are exacted for enrolment beyond a willingness and ability to pay \$15 down and \$5 a month thereafter until \$40 has been paid. That is for the course in general nursing. The course in obstetrical, gynecological and surgical nursing comes higher, \$50, and both courses are imposingly outlined in the pamphlet.

If this first batch of literature fails to convince

and the application hangs fire, it is followed by a touching and mildly reproachful epistle, beseeching the rash applicant for information not to neglect to "develop her natural gifts," and repeating the assertion that that way lies "increased earning power." As another spur to flagging enthusiasm, it is stated that the tuition fees are to be raised 25 per cent. in the near future, and doubtless this suggestion of a bargain sale may prove effective in certain quarters.

About this time, also, comes another pamphlet with another pretty girl on the cover, intent, this time, on a thermometer. Inside are letters from ex-pupils of the institution, accompanied by their photographs, testifying to the benefits derived, financially and spiritually, from the course, and congratulating its students upon the fact that they do not "lose their refinement and sympathetic nature, as many of the hospital nurses do."

Doubtless the letters are written in good faith. The mind that would be attracted by such a scheme would be apt to be satisfied with its results. But when one notices how cleverly all the advertising is adapted to appeal to the ignorant, the mercenary and the visionary, the menace to the public really becomes of grave import.

#### AN INTERESTING CENTENARY.

A CENTENARY volume, rich in names and deeds, has been sent to us from Dr. Osler. It is the history of the doings of the Royal Medical and Chirurgical Society of London since the year 1805, when the society was founded.

The death of John Hunter, who had for years gathered the choice spirits of medicine around him in his museum at the back of his grand house in Leicester Square, left his fraternity shaken for want of a leader; the fashion of dining and debating at coffee houses in the manner of Addison's day was going out, and the conditions were ripe for the formation of a new society, when a very human impulse of reaction against the irksome rule of Dr. Sims, who had for nineteen years as president nagged the Medical Society of London into a state of rebellion, surged strongly enough to gather together a society consisting of twenty-eight active members.

During those first five years the monthly meetings were slimly attended by the founders themselves; but comfortable rooms were furnished in

Verulam Buildings, papers were read and discussed and published by young men whose names have since become world-famous. The first glimpses of certain surgical operations and the first exposition of some theories that are to-day standard were there talked over with mingled caution and enthusiasm, and sometimes in the annals of a meeting, when but five or ten were present on a wet and foggy night, there appear with no apparent notes of excitement or unwonted interest, facts which have since proved to be landmarks in the history of surgery and of medicine.

The first and second volumes of the Society's transactions created great interest, for it was not only an honor but an advantage in practice to have a paper in the Transactions. The present Medical Journal and Transactions of many Societies and Hospital Reports were not then in existence, so that these transactions represented a favorable medium for the presentation of original work.

Through its successive homes in Lincoln's Inn Fields and Berners Street, until the present time when its building in Hanover Square is enriched with the busts and portraits and works of all the men that English medicine holds sacred, the Society has gone on growing. Agitation over phases of medical society life, proposed unions with other societies, and the birth of innumerable societies for specialized work have all threatened to diminish its power, but at its hundredth birthday it lives in a gracious old age, with no more serious obstacle to be overcome than the lateness of the modern dinner hour, which prevents prompt attendance, and its bad rule of printing papers before they are read, which enables the indolent man to read them quietly at home in slippers.

The volume includes biographical notes of the fifty presidents of the Royal Medical and Chirurgical Society, and we may read with their names a chronicle of the march of medical discovery through the last century. More than that, friendships and associations between the great men of English medicine and the great men of the English nation are vividly set forth, so that one may catch, as it were, a photographic impression, biographic, in a double sense of the word, of these leaders of men marching onward through the century and disseminating their discoveries of the laws of health and healing to the people at large.

## ECHOES AND NEWS.

## NEW YORK.

**A New Society.**—On November 22 the New York Reno-Vesical Society was organized for the purpose of studying the diseases of the bladder and kidneys. The officers for the ensuing year are: President, Ramon Guiteras; Vice-President, Winfield Ayres; Secretary, Robert R. Hollister. The meetings are to be held monthly. The membership is limited to fifty.

**Epilepsy Prize.**—At the fifth annual meeting of the National Association for the Study of Epilepsy, held in the Academy of Medicine, New York City, on November 29 last, Dr. W. P. Spratling, president, announced that the association offered a prize of \$300 for the best essay on the Etiology of Epilepsy. Physicians in any country may compete for this prize. The award will be made in November, 1906, but all essays submitted must be sent in by September 1 of that year. Details as to conditions governing the award may be obtained from Dr. W. P. Spratling, Superintendent of The Craig Colony for Epileptics, Sonyea, Livingston County, N. Y.

**Society of Moral and Sanitary Prophylaxis.**—The December meeting of the Society of Moral and Sanitary Prophylaxis will be held at the Academy of Medicine on Thursday, December 14, at 8:30 P.M. The following questions will be discussed: 1. Should education in sexual matters be given to the great body of the young men of the working classes? By Dr. L. Duncan Bulkley. 2. Should this instruction be individual or collective, through pamphlets, tracts, lectures, talks to young men, etc.? By Rev. J. J. Wynne, S.J.; Dr. F. N. Seerley, of the International Y.M.C.A. Training School. 3. What social groups and agencies whose work brings them in direct contact with the living conditions of the people may be utilized for this educative work? By Dr. David Blaustein, Superintendent of the Educational Alliance. 4. Should this education be extended to the young woman of the working classes? By Dr. Margaret Cleaves. General discussion by prominent members of the laity and medical profession.

**Epilepsy on Films.**—The first moving pictures of epileptic seizures ever produced were shuttled off before the fifth annual meeting of the National Association for the Study of Epilepsy at the Academy of Medicine in West Forty-third Street on November 29. About 37,000 accurate pictures, showing the development of numerous seizures at the Craig Colony for Epileptics at Sonyea, N. Y., were exhibited. They were made under the superintendence of Dr. W. G. Chase, of Boston, and Dr. W. P. Spratling, president of the association and superintendent of the colony. Dr. Chase prefaced his comments on the pictures by pointing out the value to medical science of these new studies. Students in the clinics, he said, had formerly to wait many days to observe even a mild seizure of the affection. But now the most aggravated and the most trivial symptoms could be studied in detail at will. This, he said, was of incalculable value not alone to students, but to the advanced specialist in epilepsy. Not alone were the moving pictures prepared, but films covering a complete seizure had been printed in a small book. By running the thumb over the pages they would fly back, giving the whole seizure. Thus every doctor could have epileptic fits in a vest pocket edition or in a large edition de luxe, as he pleased. The epileptics were shown on a large rubber blanket before a dark screen. The most delicate tremor of the muscles of face and body could be distinguished

as the fit progressed. Comments were made by Drs. Spratling and Chase, pointing out the peculiar manifestations of each type of the disease. The exhibition closed amid the applause of the large audience of medical men.

**Tuberculosis Exhibition.**—The American Tuberculosis Exhibition, in the American Museum of Natural History, Seventy-seventh Street and Central Park West, might make a little museum all by itself. In fact, the exhibition is a popular educational measure—the most striking that has ever been taken in the present widespread campaign against tuberculosis. Organized under the auspices of the National Association for the Study and Prevention of Tuberculosis and the Committee on the Prevention of Tuberculosis of the Charity Organization Society, it shows the main facts with regard to the disease and its prevention and cure. The Health Departments of various cities and private sanitariums all over the United States have contributed to the exhibition, and the person who visits it cannot fail to come away "wiser and sadder." A large placard in red letters announces as the text for the show a sentence from Pasteur: "It is in the power of man to make all infectious diseases to disappear from the world." To the right on entering is a wax figure reclining in an outdoor chair, muffled up to stand the cold in woollens and a tam-o'-shanter, with an individual, hygienic "sputum box" in her right hand, in her left a copy of Mrs. M. B. G. Eddy's "Science and Health" to beguile the tedium of the rest cure. It smells of mortality a bit and the Eden Musee, but the little lady is the Consumptive Queen, and everything else in the exhibition is meant to minister to her needs. The variety of these things is great. Among them are many variations of tents which shall protect the sleeping patient from draughts while not excluding a breath of fresh air. One interesting adaptation of the tent idea is known as the window tent, by which the patient may sleep indoors and yet breathe the night air directly from the outside without getting any of the air in the room. This is accomplished by means of a canvas cover that holds his head as in a hood, open only to the open window. The air once breathed, being heated, rises and escapes through the window at the top. But there are models of many other tents, bedrooms, wards and open air pavilions. One photograph shows a pavilion full of people in the Maine mountains on a day in winter. It is called a "zero party," and is, "quite the thing to do." Johns Hopkins Hospital sends a visiting nurse's basket containing all things needed on a visit to a patient in the slums, ranging from tissue paper handkerchiefs to tracts on the subject and a "sputum cup." Models and photographs of sanitariums, not only from New York, but from Boston, Philadelphia, Chicago, Colorado, and many other places, crowd the floors and the walls, and contain many hints for the care of patients. They all lay emphasis on the cleanliness and freshness that are such important factors in the successful treatment. And the quantity of tracts and placards on the subject would make a tuberculosis library. The photographs of the mountains and meadows in which the patients are treated are so delightful, so full of the spirit of holiday leisure and quiet vacation fun, that they should tempt any victim who thinks he can't afford to leave town, to go anyway, and have a good time, and be cured.

## PHILADELPHIA.

**More Aid for Sufferers.**—The Hahnemann Hospital graduated eleven nurses on the evening of November 29, 1905. The Rev. Floyd W. Tomkins opened the



exercises with prayer. The address was delivered by Mrs. Frederick Schoff and Dr. Frank Betts, who acted as chairman, announced the successful candidates. The music was furnished by the orchestra and the mandolin club of the college.

**Aid for Insane Women.**—The annual Christmas sale of needlework done by the insane women of the Philadelphia Hospital was held Monday and Tuesday of this week. The material offered at this sale was largely composed of embroidered center-pieces, handkerchiefs, etc. Many of the women engaged in this work are very skilful and turn out excellent work. The money realized will be utilized to pay the salaries of teachers of embroidery and to provide treats for the patients.

**College of Physicians of Philadelphia.**—The Mütter lecture on Surgical Pathology was delivered by Dr. A. O. J. Kelly. His subject was: "The Infection of the Biliary Tract, with especial reference to (1) Latent or Masked Infections; (2) the Remote Consequences of Biliary Infections; (3) the Interpretation of the Varying Clinical Phenomena Based Upon a Knowledge of the Varying Pathological Lesions; (4) the Indication of Surgical Intervention; (5) the Final Results of the Surgical Intervention in Biliary Infections."

**Maternity Home Opened.**—November 29 saw the opening of a maternity home which is connected with the Presbyterian Hospital. The name of the donor is unknown; in 1902 he gave \$30,000 for the establishment of the institution and some time later the amount was increased to \$42,670. The building is composed of brick; it contains an operating room, six private rooms and ten ward beds, and is equipped with all modern conveniences. The Rev. Charles Dickey made the presentation address and the building was accepted by Charles H. Mathews on behalf of the board of trustees.

**Aid for the Jefferson Maternity.**—November 28 was devoted to receiving donations at the Jefferson Maternity. It was particularly desirable that the affair should be successful since the building at present occupied is entirely too small to accommodate the number of patients that apply for treatment; therefore, it has been determined to take larger quarters. In announcing this fact the Board of Managers state that \$100 will care for a child for one month, \$300 will endow a bed for one year and \$5,000 will endow a bed permanently. The proceeds of the day amounted to \$300, together with some clothes and food. During the year \$5,909.43 were donated to this institution; its expenses were \$5,102.54.

**The Philadelphia Neurological Society.**—The regular meeting of this society was held November 28, 1905. The scientific program was opened by Dr. Philip A. Sheaf, who exhibited a case of and read a paper on "Locomotor Ataxia Presenting Unusual Arthropathies of the Feet." Dr. J. H. W. Rhein then exhibited a case and read the notes on "A Case of Injury to the Face, Followed by Paralysis of Several Cranial Nerves." The discussion on this case was opened by Dr. Risley. Dr. Charles K. Mills exhibited a "Case of General Myokymia." Dr. T. L. Coley reported "A Rapidly Fatal Case of Myasthenia Gravis." The discussion was opened by Dr. J. H. Lloyd and continued by Drs. Burr, Mills, McCarthy and Coley. Dr. D. J. McCarthy reported a "Case of Unilateral Tuberculosis Meningitis." Dr. G. A. Moleen and Dr. Wm. G. Spiller read a paper upon "Chronic Anterior Poliomyelitis in the Adult;" they reported a case with post-mortem findings. The paper which Dr. Burr was to present was held over to the next meeting.

**The Hygienic State of the Schuylkill River.**—Recently the attention of the Mayor has been called by Dr. Dixon to the fact that perhaps the typhoid convalescing patients who frequently row on the Fairmount dam may infect that water and since the city supply is taken from below the point named, the disease may spread from this source. The State Department of Health has sent out men to determine what is being done in the way of purifying the Schuylkill River. It is curious to know whether or not the dumping of sewage into the stream is still carried on, especial attention will be paid to the action of Reading and Norristown, which towns are planning for additional sewers without providing new methods for the disposal of the sewage. The former town, which is battling "graft," has sought the aid of the Health Department and it has been advised to procure a good sanitary engineer. Norristown seems somewhat backward in taking hold of the matter. It is the opinion of the Health Commissioner that each town will follow instructions and that the water in the Schuylkill will be in a very much better state.

**Vaccination Is Not Compulsory.**—Attorney General Carson holds that parents cannot be compelled to have their children vaccinated. He points out that the case of the Commonwealth and Smith rules it out squarely. A Justice of the Peace fined the parent for not sending his child to school with a doctor's certificate. Federal Judge McPherson in this case held that the teacher had a right to refuse the child admittance to the school, but there was nothing in the law which made vaccination compulsory. Attorney General Carson says "the parent discharges his duty when the child is sent to school; another statute requires the teacher to refuse the child to enter without a certificate; the compulsory education law does not make vaccination compulsory, nor does it require a child to obtain a certificate." In commenting upon this opinion Dr. Brooks, superintendent of the public schools of Philadelphia, said a "majority of the people of this city did not object to vaccination." He stated that he did not believe more than a half a dozen parents ever refused vaccination when the condition of affairs was explained to them. He also stated that no child which has been refused admittance to school owing to the objection to vaccination by the parent will be allowed to go to work until that child reaches the legal age.

**New Director Is Active.**—One of the first problems Dr. Coplin, the newly elected director of Public Health and Charities, undertook to investigate was the milk proposition. Although this matter was begun by his predecessor he is determined to carry it farther and to determine whether or not typhoid bacilli are disseminated by this medium. Dr. Coplin then turned his attention to the Philadelphia Hospital, where he spent his entire Thanksgiving Day. The Department of Public Safety was asked to make an examination with regard to the efficiency of the fire escapes of the institution. At the Philadelphia he found overcrowding in the insane and the nervous wards; as results of such a state many patients are compelled to sleep on the floors. There is a deficiency of clothing and also of heat. He states that in the Bellevue Hospital, New York, there are 800 patients and in the Philadelphia there are approximately 1,200, yet the cost of maintenance is 50 per cent. less in this city. One of the greatest, if not the greatest, obstacles which the director will have to combat is the question of obtaining greater appropriations for the maintenance of his department. He spent the greater part of Monday afternoon with the Finance Committee; appropriations asked for amounts to \$650,-

396. This amount is now considered insufficient, since it has become known that the State will not care for the insane children who are to be kept separate from the adult insane.

### CHICAGO.

**Prohibition of Sale of Dangerous Drugs.**—At a meeting, held November 20, the City Council of Chicago passed an amendment to the ordinance prohibiting the sale of morphine and similar drugs, so that now they can be obtained only on the prescriptions of physicians or dentists.

**Report of Chicago Relief and Aid Society.**—The forty-eighth annual meeting of this society was held in November. It was reported that the society had spent \$26,400 in relieving the poor during the fiscal year. A new feature of the work was the fresh air station for sick babies and visiting nurses' association. One hundred and sixty hospital beds are now controlled by this society.

**Committee on Nomenclature and Classification.**—Commissioner of Health Charles J. Whalen has asked the Chicago Medical Society to appoint a committee of experts in the nomenclature and classification of causes of deaths and the registration of vital statistics, authorized by the society to make a study of the department's methods and work in these subjects, with instructions to report any defects discovered and to suggest practicable remedies therefore.

**Chicago's State of Health.**—For the week ended November 25 the total number of deaths from all causes was 471, equivalent to an annual death rate of 12.34 per thousand. The number of deaths is 39 less than for the preceding week, and 46 more than for the corresponding week of 1904. Pneumonia continues to lead the death causes with 73, followed by consumption, with 60; nephritis, with 49; heart diseases, with 42; violence, including suicide, with 39; acute intestinal diseases, with 25; and cancer, with 20.

**Spread of Diphtheria.**—A number of cases of this disease have been reported in Moline, Ill. The State Board of Health has announced that the promiscuous use of slate and lead pencils in public schools is responsible for the spread of contagious diseases, with especial reference to diphtheria. Diphtheria is prevalent at Metcalf and the schools and outbuildings have been thoroughly disinfected. There is said to be much diphtheria in Granville and Ladd, but the epidemic in Spring Valley is now under control.

**Annual Meeting of Evanston Hospital Association.**—The records of the Evanston Hospital show that during the fiscal year 85 free patients were admitted, or more than 25 per cent. of the total number of patients received during the year. In the children's ward 22 patients were admitted, 14 of whom were free patients. The total number of days service during the year was 7,561, or 622 days more than last year. The passport for admission is sickness or injury combined with poverty. No letters are required.

**Dedictory Exercises of the Ottawa Tent Colony.**—This colony, which was established a little more than a year ago, will hold its dedicatory exercises December 12 at Ottawa, Ill. There will be short addresses by physicians and laymen. Physicians interested in this colony have demonstrated the possibility of cure of tuberculosis in the Illinois climate, and the results of treatment have been quite as suc-

cessful as anticipated. Extensive improvements have been made to meet the increased demand and to make the treatment more attractive.

**Quarterly Report of the Illinois Commissioners of Public Charities.**—This report for the quarter ended September 30 gives the following as the per capita cost of the various State institutions: Illinois Western Hospital for the Insane, Watertown, \$26.21; Illinois Eastern Hospital for the Insane, \$30.05; Illinois Hospital for the Incurable Insane, \$30.32; Illinois Central Hospital for the Insane, \$31.27; Illinois Southern Hospital for the Insane, \$35.13; Illinois and Northern Hospital for the Insane, \$38.67; and Illinois Asylum for Insane Criminals, \$50.43.

**New Army Medical Bill Endorsed.**—At a meeting held November 13 the Adams County Medical Society adopted a resolution with reference to increasing the efficiency of the Medical Department of the United States Army, as follows: *WHEREAS*, Seven years have elapsed since the country was shocked by the disgraceful sanitary conditions which prevailed at Chickamauga, Jacksonville and Camp Alger, during the Spanish war, and yet no successful effort has been made to remedy the inadequacy and faulty organization of the Medical Department of the United States Army, to which this utter failure of military sanitation is chargeable; and, *WHEREAS*, The continuance of these discouraging conditions is depleting the army medical service of its best men by resignation, and deterring the brightest minds of the profession from seeking a future in so promising a field; therefore, *Resolved*, That in the judgment of this society the situation is so critical as to demand immediate measures for relief.

### GENERAL.

**Dr. John C. Munro Under the Knife.**—Dr. John C. Munro, of 173 Beacon Street, Boston, has been successfully operated on for appendicitis at the Carney Hospital. The operation was performed by Dr. John T. Bottomley.

**Resignation of Dr. Vaughan.**—Assistant Surgeon-General George Tuily Vaughan has resigned his commission in the Public Health and Marine Hospital Service in order to devote his entire time to the practice of surgery.

**Faulkner Hospital Report.**—The annual meeting of the Faulkner Hospital Corporation was held recently at the hospital, on Centre Street, Jamaica Plain, Mass., President Henry B. Chapin, of the board of trustees, presiding. Reports of the board of trustees, Treasurer Alfred Bowditch and the superintendent, Miss Laura E. Coleman, were read and ordered to be printed. The total number of patients treated at the hospital for the year was 368; average free patients per day, 6.

**Fifteenth International Medical Congress.**—As a large number of American physicians will attend the Fifteenth International Medical Congress, to be held in Lisbon, Portugal, April 19 to 26, 1906, itineraries have been arranged to enable the journey to be made with the maximum of comfort and enjoyment, at fixed inclusive fares. The business arrangements of the tour have been placed, as before, in the hands of Thos. Cook & Son, the well-known tourist agents, which insures complete service for the trip, and relieves passengers from all troublesome details incident to foreign travel. Those delegates who attended the last congress in Madrid, sailing from New York on the "Prinzess Irene," will remember the excellent service afforded them. A preliminary

circular has been issued, and more detailed information will follow.

**Electrical Stimulation.**—Professor Frank W. Bancroft, of the Department of Physiology at the University of California, has completed some important experiments dealing with the effects of electrical currents on sea life, and has issued the results in a bulletin entitled "On the Validity of Pflüger's Law for the Galvanotropic Reactions of Paramecium." Dr. Bancroft has succeeded in demonstrating that the cilia covering the body of the paramecium and the cause of its locomotion respond to electrical stimulation by changing the direction of their movement. When an electric current passing through water containing the paramecium is interrupted, the cilia reverse their beat on that end of the animal which is nearer the anode, or positive pole. When the current is made again, and during its flow, only cilia on the end nearer the cathode, or negative pole, reverse. These results are in strict accord with the law formulated by Pflüger for the phenomena of muscular contraction under electrical stimulation.

**Dr. Bowditch Leaves Rutland.**—Dr. Vincent Y. Bowditch, of Boston, visiting physician at the State sanatorium for consumptives at Rutland, one of the most desirable medical positions in the gift of the State, has resigned his connection with the sanatorium, the resignation to take effect December 31. Dr. Bowditch's action was brought about by lack of harmony with the governing board of trustees. Dr. Edward O. Otis, of Boston, has been appointed to succeed him. Dr. Bowditch himself would say nothing regarding his resignation, and his friends were equally reticent, but Dr. John P. Rand, of Monson, a member of the board of trustees, said that the Boston physician had come to be out of harmony with the majority of the board, although there was no criticism to be made of Dr. Bowditch. Dr. Bowditch graduated from Harvard College in 1875 and from the Harvard Medical School in 1879. He was an instructor in the Medical School in clinical medicine. He is visiting physician at the Boston City Hospital and the Sharon Sanitarium. He is a member of the American Climatology Association and the Massachusetts Medical Society. Dr. Edward O. Otis, his successor as visiting physician at the sanatorium, is a graduate of Harvard Medical School, class of 1877.

**Bubonic Plague in Hawaii.**—The Board of Health in Honolulu has decided to abandon its policy of silence in regard to sporadic cases of bubonic plague, and to ask the newspapers to publish every two weeks reports of all contagious diseases occurring during that time. The board has been led to adopt this policy by the fact that exaggerated rumors have become circulated lately regarding the number of cases of plague. This community four years ago passed through a trying experience. Honolulu had been quarantined for months. More than a million dollars had been spent in sanitary and other measures for the suppression of the epidemic. Business had been deranged, and the tourist traffic of the island had almost been destroyed. During all this time there had been fewer than 100 cases of plague. The epidemic was broken, but occasional sporadic cases were found. To prevent the general state of panic, the derangement of business and the feeling of discouragement which it was feared would follow if each of these occasional cases was made public, the Board of Health entered into an arrangement with the newspapers of Honolulu, by which it was

agreed that no publicity should be given to such cases. The board agreed to notify the newspapers of each case as it occurred, as it also notified the Federal quarantine authorities, and the cases appeared regularly in the monthly tabulation of vital statistics prepared by the board. During the four years the occasional cases of plague have been regularly reported to the quarantine officers and by them reported to the Marine Hospital Service at Washington, and published in the weekly and monthly reports of the Marine Hospital Service. At most times this policy has proved satisfactory, though gossip has constantly been exaggerating and distorting the status of affairs. On several occasions when cases of plague have been found within a few days rumor has become unusually busy, and alarm and uneasiness have spread throughout the community. During October six cases of plague were discovered, and rumor multiplied this number to sixteen, thirty-five, fifty-four, and even as high as eighty deaths a week. Because of this President Pinkham, of the Board of Health, recommended to the board that the newspapers be requested to publish at frequent intervals the official record of plague cases. It is hoped by this means to prevent the spread of exaggerated rumor.

**Canal Zone Made Healthful.**—Late reports from the Canal zone are very encouraging as regards yellow fever. Col. Gorgas says that last month only one man of the four thousand non-immunes in the isthmus was bitten and not a death from yellow fever occurred. Net cost for the whole work, about \$1,200,000. "This," he reported to Governor Magoon, "I consider as indicating the near approach of the disappearance of the disease. Panama often has been free from yellow fever," he explained, "but the only disappearance was when they had no non-immunes to contract it. At all times when there were non-immunes here they had yellow fever as long as the non-immunes remained. During October all the conditions were favorable for yellow fever. About four thousand non-immunes were here—more than ever before—and the month was wet and hot. Apparently, from the records, the season does not bear much reference to yellow fever. The weather in January is as favorable for the breeding of the *Stegomyia* as in July. The records show that if we have non-immunes in Panama in December we will have as much yellow fever as we would have in July. It has altogether in the past depended upon the supply of non-immune human beings. The only yellow fever period when there was approximately as many non-immunes on the isthmus as we have at present was at the time during the French régime, when they had their maximum force. This was in October, 1884, when they had 19,243 men on their rolls, of whom 2,706 were non-immunes. Among these during that month they had eighty-four cases of yellow fever and twenty-one deaths. We had four thousand non-immunes, one case and no deaths. The periods compared were the same month of the year, the climatic conditions were the same and the number of the non-immunes in both was large, ours being two to one. The great difference was that in the year 1905 modern tropical sanitary methods were enforced all over the isthmus by twenty-two hundred men at a very moderate expense for the result achieved. In 1884 these methods were unknown. Malaria and yellow fever were a mystery to science. Our predecessors were unable to do anything for their control. I maintain that our



success is due entirely to the sanitary measures put in force. The record proves it. I have no doubt that when the sanitary improvements at present going on, such as street paving at Panama and Colon, water works and comfortable, screened buildings for employes at all points, shall have been completed, the health conditions will still further improve. The sanitary condition of Panama can be considered as settled. The general health of our forces engaged on the canal can now be kept as good as if they were digging it in a healthy part of Maryland." Some idea of the magnitude of the sanitary work is given by the figures for October, when 2,164,537 square yards of brush and grass was cut and burned, three miles of new drains were dug, twenty miles of old drains were cleaned and oiled, and 20,000 square yards of swamps were drained and filled in. One hundred houses were fumigated, thousands of tanks, wells and cisterns disinfected, and a vast amount of other sanitary work was done. The report is made that the natives are gradually learning to abate nuisances and to cooperate with the authorities. A sharp watch was kept on the incoming vessels that no infected person should land. The passengers examined numbered 2,585.

#### OBITUARY.

The death of Professor Dr. VON LEUTHOLD, surgeon-general of the army and the Emperor's body physician, is reported from Berlin, on December 4.

Dr. LEVI WOOD died recently at his home in Ephratah, Fulton County, N. Y. He was sixty-two years old and was one of the oldest and most prominent practitioners in that section.

Dr. ERNEST J. MEIERE, a Confederate army surgeon, died in Cripple Creek, Col., on December 3, of pneumonia, aged seventy-five years. Dr. Meiere was appointed a consul to China, in 1888, by President Cleveland, but resigned, it is said, because President Cleveland demanded that he apologize to an army lieutenant whom the physician struck for refusing to shake hands in Washington.

Dr. EDSOY DAVIDGE ROYAL died November 28 at the home of his parents in Lebanon, Conn. Dr. Royal was thirty years old. He was a graduate of the College of Physicians and Surgeons, and after graduation became connected with the Paterson General Hospital. He leaves surviving him his parents, Mr. and Mrs. N. B. Royal, of Lebanon, Conn., and a brother, Ralph Royal, a lawyer of New York City.

Dr. EDWARD OSBORNE, the last of a family that for two centuries enjoyed the respect of the residents in and near East Hampton, L. I., died December 4 of heart trouble. Dr. Osborne was seventy years old. He was one of the most charitable men of the place. On hundreds of occasions, his friends attest, he braved fierce storms to drive miles through snow and sleet at night to visit sufferers who he knew could never pay him for the service. Since 1735 the Osborne family had occupied the same homestead in East Hampton.

Dr. AMBROSE L. RANNEY, a well-known specialist, died suddenly last week in the office of Frank L. Hall, an attorney, on the sixteenth floor of the Johnston Building, 30 Broad Street, New York. Dr. Ranney was an old friend of Mr. Hall's, and although the attorney was not his counsel the physician visited him. A Elliott Ranney, the doctor's son, arrived quickly in answer to the telephone summons. He was shocked when he found his father dead. He did not know his father had heart trouble. Dr. Ranney kept this from his son and from his wife, who is seriously ill at

her home, 345 Madison Avenue. Dr. Ranney was born in Hardwick, Mass., on June 10, 1848. He graduated from Dartmouth College in 1868, and was one of six brothers who were well known in the medical world in this city. Dr. Ambrose Ranney held chairs of anatomy and nervous disease in various colleges and wrote a good deal on medical subjects. He married Miss Marie Celle in 1876. Some of the medical books which he wrote are: "Essentials of Anatomy," "Applied Anatomy of the Nervous Systems," "Treatise on Surgical Diagnosis," "Practical Medical Anatomy," "Lectures on Nervous Diseases" and "Electricity in Medicine." He was a member of the Academy of Medicine and other medical societies, as well as a member of the Union League and the New York Yacht clubs. Dr. Ranney was well known in amateur billiard circles. He was a skilful player, and was prominent in the promoting of big tournaments held at the Knickerbocker Athletic Club. Foss, Mullen, McCreery, now dead; McKee, Threshie, Smith, Sigourney, of California, and other amateurs of note competed in the tournaments which he helped to arrange. He was a great lover and student of the game, and never missed a tournament if he could help it. Only this week he took in several games of the tournament in progress at the Liederkranz. Dr. Ranney also was a yachtsman. He owned the auxiliary schooner Planet.

#### SOCIETY PROCEEDINGS.

##### SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE.<sup>1</sup>

THE thirteenth meeting of the Society for Experimental Biology and Medicine was held in the Physiological Laboratory of Columbia University, at the College of Physicians and Surgeons, on Wednesday evening, October 18, 1905.

The President, Edmund B. Wilson, in the Chair.

**Members Present.**—Adler, Auer, Brooks, Burton-Opitz, Calkins, Dunham, Emerson, Ewing, Field, Gies, Hiss, Jackson,<sup>2</sup> Lee, Levene, Levin, Lusk, Meltzer, Meyer, Murlin, Noguchi, Norris, Park, Richards, Salant, Sherman, Sweet, Torrey, Wadsworth, Wilson, Wolf, Woodworth, Yatsu.

**Members Elected.**—Carl L. Alsberg, S. P. Beebe, R. H. Chittenden, P. M. Dawson, W. J. Elser, G. M. Meyer, Philip Shaffer, Douglas Symmers, L. L. Woodruff.

##### ABSTRACTS OF ORIGINAL INVESTIGATIONS.<sup>3</sup>

**A Fatigue Wheel.**—By Frederic S. Lee.—The author demonstrated a wheel designed for fatiguing mammals by means of voluntary muscular work.

**Mutation in the Evening Primrose, *Onagra biennis* (L.) Scop., with Demonstrations.**—By Elizabeth Billings and Frederic S. Lee.—Culture experiments by the authors confirm MacDougal's discovery of a narrow-leaved mutant of this species. From purely pollinated seed obtained by MacDougal and Britton from a wild plant growing at the New York Botanical Garden four hundred and ninety-nine seedlings were obtained, of which three belonged to the narrow-leaved type. It is possible that a second mutant was found, but further observations are needed to confirm this. The species here studied is not the *Onagra biennis* studied by de Vries.

<sup>1</sup> Proceedings reported by the Secretary, William J. Gies, Ph.D., of New York.

<sup>2</sup> Non-resident.

<sup>3</sup> The authors of the communications have written the abstracts. The Secretary has made occasional abbreviations in some of them.

**Influence of Thyroid Feeding and of Various Foods and of Small Amounts of Food Upon Poisoning by Acetonitril.**—Reid Hunt (Presented by Alfred N. Richards).—One of the current theories of the functions of the thyroids is that these organs neutralize certain poisons occurring in the body; these poisons are purely hypothetical and, so far as the author is aware, no one has yet reported experiments in which it has been shown that the thyroid can render a poison harmless. In the present experiments it was found that mice, to which thyroid had been fed for a few days, were markedly resistant to acetonitril; such mice recovered from the effects of ten to eleven times the ordinarily fatal dose of acetonitril. No such increased resistance to hydrocyanic acid or nitroprussiate of soda was caused by the thyroid feeding. Thyroidectin had an effect the opposite to that of the thyroid, i.e., it increased the susceptibility of mice to acetonitril, but this effect was not greater than that of dried normal blood and was less than that of peptone. Feeding with parathyroids had an effect the opposite of that of thyroid, i.e., it caused the mice to become more susceptible to acetonitril; the effect, however, was much less marked than that of the thyroid. Potassium iodid increased the resistance of mice to acetonitril, but the extent of this action was not at all comparable with that of the thyroid.

In other experiments it was found that a proteid diet (ham and cheese) caused an increased susceptibility of mice to acetonitril; a carbohydrate diet (rice and dextrose) increased the resistance to this poison. As a rule it required about four times as large a dose to kill the animals that were fed on a carbohydrate diet as it did to kill those fed on a proteid diet. Animals kept on a very limited diet also showed a marked resistance to acetonitril; in most of such experiments it required about three times as much acetonitril to kill as was necessary to accomplish the same result on animals which had been kept on a normal diet. These animals showed no increased resistance to hydrocyanic acid. The experiments are being continued.

**A Case of Spirochætal Infection in Man, with Demonstrations.**—Charles Norris.—The author's object in presenting this case was to give the members of the society an opportunity of seeing the spirochætes under the microscope.

He did not enter upon the clinical history of the case, which occurred in the service of Dr. Carlisle, of Bellevue Hospital. In July of this year the patient shipped as an assistant steward on the "Denver," of the Mallory Line, and stayed five days in Galveston, sleeping on board, and returned on the same steamer to New York. Two days later he was taken with a chill, accompanied with fever, prostration and pains in the bones. On admission he had a temperature of 102.4° F. The fever continued for two days. After four days of normal temperature there was a rise of temperature to 105, which was followed by a period of apyrexia for ten days, when he again had a relapse. At that time the examination of the blood by Dr. Heitlinger showed the presence of a few spirochæta. Ten days later there was another relapse and rise of temperature, associated with the presence of spirochætes in the blood. Inoculation of a monkey with the blood containing the organisms gave rise to an infection with the presence of spirochæta. The monkey has had three relapses thus far, with rise of temperature, and the presence of spirochæta in the blood. Two

additional monkeys have been infected with the blood of the first monkey.

The case reported is of interest from many points of view. It appears to be the first case reported in this country of spirochætal infection, verified by microscopical examination of the blood. Another case, it is said, has been recently observed in one of the hospitals of this city.

The research work of the past few years upon the tropical diseases of man and animals has brought to light, especially in South Africa, the discovery of the etiological agents of various hitherto little understood diseases.

Obermeier, in an epidemic of relapsing fever in 1868 in St. Petersburg, was the first to discover the presence of spirochæta in the blood of patients suffering from so-called relapsing fever. The observation, however, was not published until five years later. To Obermeier belongs the credit of having first demonstrated the so-called Contagium Vivum of infectious diseases in man. The association of spirochæta with another infectious disease was made by Sacharoff in 1890; he demonstrated the etiological connection of the *Spirochæta anserina* to the spirillum fever or septicemia of geese. In recent years other spirochæta have been described in connection with disease processes. Thus, A. Theiler has described what he calls La Spirillose du bœuf, caused by a spirochæta which is found in the blood, where it produces an anemia, being present principally among cattle in bad condition. Like the *Piroplasma bigeminum*, it lives in the blood of immune cattle, as the disease has been inoculated with the blood of such cattle. The disease is conveyed through the agency of the blue tick, which is the intermediate host. Like the *Piroplasma*, the infective agent passes into the egg and is inoculated by the larvæ. He believes the *Spirochæta* is a parasitic protozoon.

Two English observers, Dr. Todd and the late Everett Dutton, have found that the tick fever, or at least some cases of tick fever, are associated with the presence of spirochæta in the circulating blood. They believe that tick fever is clinically identical with relapsing fever, and that it has for a pathogenic agent a spirochæta which they consider probably identical with the spirochæta of relapsing fever, as described by Obermeier. They believe that a tick, the *Ornithodoros moubata*, transmits the spirillum from animal to animal, since they have conveyed the disease to a monkey by a tick, and they have evidence that the young ticks, after their first feeding, bred from infected mothers, are able to transmit the disease. They have not been able to trace the spirilli in infected ticks further than the stomach and malpighian bodies. In the light of Marchoux and Salambeni's work upon the transmission of the spirillum disease of fowls by ticks, Ross considers it probable that the disease in man is also inoculated by infected ticks.

It is unnecessary to enter at this time into the discussion of the protozoan nature of this interesting group of organisms, except to recall that Schaudinn considers that there is little doubt that the spirochæta of relapsing fever and of the septicemia of geese will be shown to be trypanosomes, and hence unrelated to the bacteria. Novy and McNeal, it will be remembered, have shown in a communication to this society (Proceedings, Vol. II, p. 23) that Schaudinn's interpretation of what he has seen is subject to grave doubt. The spirochætal forms of the



trypanosomes depicted by Novy and McNeal have not the slightest resemblance either to the organisms of this case or to Obermeier's or Sacharoff's spirilli, as shown by the photographs of the latter. The question as to the identity of the organism of this case to that of the spirillum of Obermeier cannot be settled offhand. On account of the great variety in the clinical symptoms of the reported cases of relapsing fever observed during the epidemics it is perhaps unreasonable to draw any conclusions either for or against the identity of the organism of this case to that of relapsing fever.

To settle this question, morphology gives little help. Although the organism of this case resembles the descriptions of the morphology as well as the photographs of the spirillum of Obermeier practically in all respects, it must be remembered that the spirillum of geese is strikingly similar to that of Obermeier, and yet in the animal reactions the anserina may be sharply differentiated from that of Obermeier, as it is not infective for monkeys.

The organism of this case, like Obermeier's is infective for monkeys. The following differences have, however, been noted: The disease transmitted to the monkeys inoculated by the author seems to have been much milder than the experimental spirillum infection of those animals, as reported by various observers. Relapses in monkeys have rarely been noted; by one observer in one out of eight monkeys. Other observers seem never to have observed relapses. In the author's experience three monkeys have all had relapses, the first Rhesus having already had three.

Dr. Ewing has also called the author's attention to the fact that the spirochete of this case, as seen in the blood of the inoculated monkeys, as well as in the human blood, is similar to the *Spirocheta refringens*.

Such a case directs attention to the probability of mild spirochetal infections, more or less constantly occurring, in sailors or travelers coming from southern climates into the Port of New York. The author also called attention to the possibility that infection may be communicated from person to person through the bites of ticks and bed-bugs and through wounds.

**The Chromosomes in Relation to the Determination of Sex in Insects.**—Edmund B. Wilson.—See *Science*, 1905, xxii, p. 500 (October 20).

**Experimental Hepatic Cirrhosis in Dogs from Repeated Inhalations of Chloroform.**—C. A. Herter and Wm. R. Williams.—The difficulty of inducing pronounced interstitial hepatitis in dogs by means of poisons makes it of interest to report the well-defined results obtained as a consequence of repeated inhalations of chloroform vapor. Experiments of this character were made upon three dogs. In one instance the animal received chloroform three times a week on eighteen occasions, the inhalations being continued for one hour. In six subsequent inhalations the duration of the narcosis was one and one-half hours. The duration of the entire experiment was about eight weeks. The liver everywhere was found to be the seat of an abundant, richly cellular connective tissue growth between and into the lobules. The bile ducts were proliferated and the liver cells showed much fatty and hyaline degeneration. In two other dogs a similar experiment was carried out with the exception that in these instances a highly satisfactory control was secured by first removing a small portion of normal liver

for subsequent comparison with the damaged liver. In one of these dogs the inhalations were given eighteen times in about six weeks. The animal lived somewhat longer than five months and showed a well-marked though not extreme cirrhosis. The third dog was narcotized forty-nine times and lived about eight months. The changes in this instance were perfectly distinct, but less advanced than in either of the other animals mentioned.

The liver tissue from the first dog was subjected to an analysis which showed a distinct fall in the normal percentage of the arginin constituent of the proteid molecule. Similar analyses indicate that the arginin yield from proteid may fall rapidly after even very short exposure to toxic influences, and these results, indicating early damage to living protoplasm, give much force to the contention that the connective tissue overgrowth in these cases of hepatic cirrhosis is secondary to changes in the chemical constitution of the liver cell. A further feature of interest is the fact that in two of the dogs the liver cells contained little fat at the time of autopsy. Finally, it may be mentioned that although a considerable loss in weight was observed in the dogs during the period of repeated narcotization, this loss was subsequently recovered in spite of the persistent cirrhotic changes.

These observations open the question whether the fatty and parenchymatous degenerations of the liver, which in some cases follow narcosis by chloroform in the human subject, may not occasionally pass on to interstitial cirrhosis—a single narcosis in man being sufficient to induce the primary damage to the protoplasm of the liver cell.

**Color Sense in Different Races of Mankind.**<sup>1</sup>—R. S. Woodworth.—The evolution of the color sense is very imperfectly understood. Scarcely any direct evidence is at hand regarding the color sense of animals, though some indirect evidence that various classes distinguish colors is afforded by the facts of protective and attractive coloration.<sup>2</sup> We do know from human experience that there exists a form of color vision (red-green blindness) which is less complete than the usual human type, and as it appears not to be pathological it may be, as has been suggested, a reversion. In the absence of sub-human data it is of some value to ascertain whether those races of mankind which seem to represent the more primitive stages in human development are specially subject to color-blindness. The results of various authors go to show that other races are perhaps even less subject to it than the white race. Some previously untested races were examined by the author in association with Mr. Frank G. Bruner, under the Anthropological Department of the St. Louis Exposition. Of 252 adult male Filipinos (including Christians and Moros) 14 were red-green blind, or 5.6 per cent.; of 75 males of the "wild tribes" of the Philippines (Igorots, Tinguianes and Bagobos) 2 were red-green blind, or 2.7 per cent.; of 13 male Negritos, none was color blind. Special interest attaches to the Negritos, as they probably represent a more primitive type of man than has previously been tested in this way; and though the individuals examined were too few in number to enable the author to establish the percentage of color-blindness among them, the absence of color-blindness from the 13 males tested (as well as from

<sup>1</sup> See Grant Allen: *The Color Sense, Its Origin and Development*, 1879; W. A. Nagel: *Der Farbensinn der Tiere*, Wiesbaden, J. F. Bergmann, 1901.



the women) shows certainly that color-blindness is not universal among them, and very likely not more prevalent than among more developed races. On the whole a negative conclusion is warranted as to the suggestion that the color sense has developed, within human history, from anything approaching red-green blindness.

Quite a different hypothesis has been advanced by certain anthropologists from a study of the color names of primitive languages. While all languages have names for red, and most of them also for yellow, comparatively few have definite names for green, blue or violet. Even in European languages the names of these latter colors seem to be a rather recent acquisition. The suggestion is that color vision was first developed for the red end of the spectrum; the rest remaining colorless at first, and only gradually taking on the appearance of green and blue, and that this development has occurred during human history. In testing the natives of Torres Straits, who have no name of their own for blue, Rivers obtained a certain amount of evidence in favor of this view, in that these people were somewhat less sensitive to faint tints of blue than Europeans, though rather more sensitive to red. As the Filipinos also have no native words for green, blue and violet, the authors tested them as to their power of discriminating these color. The tests employed called for the matching of dark shades of several colors with pale tints of the same. Colored papers were used; the tints were spread out in spectral order, and each dark shade was to be matched with the tint which it agreed in color. The authors found that the Filipinos, and indeed all other races examined, were inferior to whites in this test; but it was impossible to detect any special deficiency in the greens, blues and violets. These colors were relatively as well matched as the reds, and better than the yellows. Nor was there any tendency, except among the Igorots, to confuse blue, green or violet with neutral gray. The Negritos did better than many more advanced races.

The results obtained by the author are thus opposed to the view that the color sense has developed within human history from a more primitive type in which only the red end of the spectrum appeared as colored.

**The Practical Concentration of Diphtheria Antitoxin.**—R. B. Gibson.—The Department of Health of New York City has recently placed on the market an antitoxin for diphtheria prepared by a concentration of lower grades of serum. The author described the method of its preparation.

The methods which have been proposed for the purification or concentration of antitoxins are, for the most part, peculiar and tedious ways by which the whole or a portion of the globulins are separated from serum or milk. Evaporation and freezing have been tried, but the general use of such methods has not been continued. Pick states that by the isolation of his soluble or high-ammonium sulfate fraction it is possible to concentrate the protective properties ten to fifteen times. Though superficially the most applicable, Pick's method is open to certain objections. Considerable quantities of antitoxin may be carried down with the non-protective fraction on third saturation of the serum with ammonium sulfate. Such a manifold concentration is also not practicable.

An artificial concentration can best be effected, for the present at least, by preliminary isolation of the antitoxin globulins; on this procedure is based the

plan of the following method, which has proved fairly successful.

The serum is precipitated with an equal volume of saturated ammonium sulfate solution and the precipitate extracted with a solution of saturated commercial sodium chlorid. The antitoxic globulin is easily dissolved in the chlorid solution. The non-soluble globulin settles to the bottom on standing. After filtering, the NaCl solution of the antitoxic globulin is precipitated by the addition of a half volume of saturated ammonium sulfate solution, or better still, with acetic acid in the usual way. The filtered precipitate is pressed as dry as possible with paper and dialyzed in parchment a few hours. Its solution is then neutralized and dialyzed again in running water. After two or three days' dialysis of the neutralized solution of the proteid precipitate, sterilization is accomplished by a double filtration through a Berkfeld filter. Before filtration a quarter to one-half of a per cent. of sodium chlorid is added, and toluol, a preservative, is used. The strength of the filtered product is ascertained. It is tested bacteriologically, injected into animals and finally actually administered in the Department of Health hospitals before distributing.

By this method almost all the ammonium sulfate is removed before dialysis, and the additional acid precipitation gives a purer product. Dialysis is quicker under these circumstances than when the sulfate alone is employed to effect precipitation. The antitoxin is practically all recovered, and a concentration of several times the original potency is easily and constantly obtained. The sodium chlorid separation is sharp, the two groups of proteids showing essentially different physical characters as precipitates. The final product is somewhat viscous, faintly opalescent and colorless, or slightly tinged with hemoglobin. Dried at low temperatures, a beautifully transparent and entirely soluble scale antitoxin is obtained. Large quantities of serum can easily be worked over in this way at comparatively small expense.

Tests show that the artificially concentrated antitoxin, kept in small vials in an icebox, preserves its potency as well as or even better than the ordinary antitoxic serum. Therapeutically, the comparative results obtained are identical. Local irritation, rashes, etc., seem to be less frequent and severe when the refined antitoxin is administered. Hundreds of injections have been given in the Department hospitals, yet no infection for which the antitoxin is responsible has resulted.

The method of separation is possible and practical largely because of the extreme solubility of the antitoxic globulins and the remarkable retention of this character as compared with the behavior of other proteids. The antitoxic properties follow this soluble globulin at every step, and are lost or lessened only by such agents as can considerably modify or actually destroy the proteids.

**On the Effect of Magnesium Salts Upon the Excitability and Conductivity of Nerves.**—S. J. Meltzer and John Auer.—In their communication to this society (Proceedings, Vol. II, p. 8r) on the anesthetic effect of magnesium salts after subcutaneous injections, the authors stated that they made several series of experiments on the physiological and pharmacological effects of these salts, and that all their experiments had demonstrated a common result, namely, that magnesium salts produce a profound effect upon the nervous system, and that this effect

is invariably of an inhibitory character. In their recent experiments the authors applied solutions of magnesium salts to the sciatic, pneumogastric, depressor and sympathetic nerves of rabbits. Numerous applications of the magnesium salts to the various nerves failed to produce, in any instance, a phenomenon which could be interpreted as an excitation, but in all cases there was produced sooner or later a profound inhibitory effect upon the conductivity of the nerve under experimentation. After application to the sciatic nerve, the conduction of motor and sensory impulses was manifestly inhibited; a strong stimulus applied below the block caused strong contractions of the muscles of the thigh, but no pain; when applied above, pain, but no contraction was caused. In experiments on the depressor, stimulation on the distal side of the block failed to produce a fall of blood-pressure. Applications to the sympathetic blocked the conductivity, so that strong electrical stimulations applied to the section of the nerve exposed to the influence of the solution, or distal to that section, failed to cause a constriction of the ear vessels or a dilatation of the pupil.

Instructive results were obtained in the experiments upon the vagi. As is well known, stimulation of the central cut end of the vagus produces an unmistakable effect upon respiration, while stimulation of the peripheral cut end causes a standstill of the heart and a contraction of the oesophagus and the cardia. When a section of about 2 to 3 cm. of an intact vagus was exposed for some time to the influence of a solution of a magnesium salt, stimulation above the block affected the respiration, but not the heart or the oesophagus, and stimulation below affected the function of the last-named organs, but not that of respiration.

Applications to the vagus nerves enabled the authors to study the blocking of normal impulses. When applied to one nerve after the other had been cut, or when applied to both intact nerves, the respirations slowed up perceptibly after a while, as happens after cutting both vagi; and also, after spontaneous or induced acts of deglutition, no contractions of the oesophagus or cardia followed.

These effects were obtained with hypertonic as well as with isotonic, and even with strongly hypotonic solutions. The weaker the solution the longer it took to establish a complete block; ten to thirty minutes was about the average time. This blocking of the conductivity could be completely removed when the nerve was washed out with Ringer's solution. When hypotonic solutions of magnesium salts were used the conductivity would often soon return without washing with Ringer solution, if simply the application of the magnesium solution was not renewed. After the application of the strongly hypertonic solutions for two or three hours the conductivity would not return for twenty-four hours or longer, sometimes not even after washing with Ringer solution, as was observed in experiments on the sciatic and on the superior cervical ganglion. Thus far the experiences of the authors indicate that the conductivity is finally restored in all cases.

**Injury to Dr. Dufloo.**—Dr. A. L. F. Dufloo, of New York City, was half strangled and robbed by two thieves last Thursday in the vestibule of his own apartment. Dr. Dufloo is sixty-five years of age and in active practice. He was badly cut, but not seriously injured.

## THE INTERNATIONAL CONGRESS ON TUBERCULOSIS AT PARIS.

(Continued from Page 1001.)

**Acid-Fast Bacilli.**—Dr. Paul Courmont contrasted these with the bacilli of tuberculosis. He said that the differences between a typical culture of tubercle bacilli and the acid-fast bacilli was very clear. The differences between homogeneous cultures of Koch's bacillus and the acid-fast bacilli, however, are much less marked. He had been unable to agglutinate the acid-fast bacilli by serums obtained from the homogeneous infections, and again the agglutination of many homogeneous tubercle bacilli did not occur with the same serums. It is possible to diminish the virulence of homogeneous cultures until they are as inactive as cultures of the acid-fast organism. No essential difference exists. It was impossible to prove that acid-fast bacilli were not saprophytic tubercle bacilli, or that the former did not under certain conditions become pathogenic.

**Researches on Experimental Infection by the Paratubercle Bacillus.**—Professor J. Canatacuzene gave the results of his researches which showed that in young cultures of acid-fast bacilli a number of units were found which took a blue color after staining with fuchsin and methylene blue. The number of these units diminished with the age of the culture. He described his technic in detail. He found that the use of pure acetone as a decolorizer after fuchsin gave very clear specimens.

**"Soil" as a Factor in Tuberculous Conditions and the Methods of Treatment.**—Professor Albert Robin urged that in welcoming sanatorium treatment, the pendulum be not allowed to swing too far. He considered the individual as the chief etiological factor. "Respiratory exchange" in tuberculous subjects showed a marked increase, and this, he considered a defensive reaction. He argued that respiratory exchange was increased in the offspring of tuberculous parents and in conditions predisposing to tuberculosis. Tuberculous subjects require more calories than healthy individuals and must have more oxygen. Reduction of respiratory exchange may be accomplished by the administration of cod-liver oil, arseniate of soda, cacodylate of soda and adrenalin. Anti-bacterial medicaments are an important element in the treatment, and every effort must be made to improve the soil.

**Tuberculous Bacillemia.**—Dr. A. Jousset said that in chronic tuberculosis of the lungs only exceptionally did the blood contain bacilli, but in acute and subacute stages they were often present in large numbers. Most commonly this occurred in caseous pneumonia. Clinically, bacillemia manifests itself by fever, rapid breathing and albuminuria. The virulence of these bacilli is inferior. He agreed with Dr. Gary that swallowed bacilli are absorbed by the intestines intact, but generally with lowered resistance.

**Pathogenic Properties of Certain Acid-Fast Bacilli.**—Dr. Rodet and Dr. Galavielle concluded that the Timothy bacillus was certainly endowed with some pathogenic power. They have been able by passing it through the animal organism to make it approach in characteristics the tubercle bacillus.

**Thyroid Insufficiency as an Etiological Factor in the Pathogeny of Tuberculosis.**—Dr. Lorand read a paper on this subject. He said that causes affecting the proper action of the thyroid gland favored the development of tuberculosis. This was



shown in man and animals after extirpation or degeneration of this gland.

Dr. Nathan Raw presented a report upon the progress of prophylactic work in Great Britain.

At the closing ceremony, Professor Von Behring made a statement in regard to his new curative principle in the treatment of tuberculosis. He said in part: "This principle is based on the impregnation of the living cells of the organism by a substance emanating from the virus of tuberculosis which I term TC. When the TC has become an integral part of the cells, and is metamorphosed by those cells, I designate it by the formula TX. In the bacillus of tuberculous the TX, or, more precisely, the TC pre-exists as an agent endowed with a great number of extraordinary properties. This agent fulfils in the tubercle bacillus the function of a formative substance. It also possesses fermentative, and especially catalytic, qualities. This agent has a selective action with regard to other substances, a phenomenon which has been termed 'adsorption.' Moreover, under certain conditions it possesses assimilating qualities. In a word, it represents the 'quasi-vital principle' of the bacilli. In my opinion in the process of immunizing bovine animals against tuberculosis the TC of the bacilli is freed from other substances. It exercises a symbiotic action in the interior of the tissues, especially upon the cellular elements which have their origin in the germ centers of the lymphatic tissue. The presence of the TC is the cause, on the one hand, of hypersensitivity to Koch's tuberculin, and, on the other, of the protective reaction against tuberculosis. . . . I have endeavored energetically and unweariedly to spare the organism the work always long and dangerous of the elaboration of the TC. In order to free TC from the substances which hinder its therapeutic action it is necessary to distinguish three groups of bacillary substances: (1) A substance soluble only in pure water, possessing a fermentative and catalytic action. From this substance, which is soluble in water, are derived the toxic elements of Koch's tuberculin. This substance has all the chromophilous, physical and chemical qualities of 'volutine,' described by our Marburg botanist Arthur Mayer. I call this substance TV. To convey an idea of the toxic power of TV I may say that a gram of this substance in a dry state is more powerful than a litre of Koch's tuberculin. (2) A globulin soluble only in a neutral salt, for example, chloride of sodium at 10 per cent. This substance is named by me TCL. It also is toxic after the manner of Koch's tuberculin. (3) Several non-toxic substances, which are soluble only in alcohol, ether, chloroform, etc.

"When the tubercle bacillus has been freed from these three groups of substances, there remains only a body which I designate as 'rest bacillus.' The rest bacillus still possesses the form and the staining reactions of tubercle bacilli. By means of suitable preparations it can so be modified as to become an amorphous substance, directly absorbable by the lymphoid cells of the guinea-pig, rabbit, sheep, goat, bovine animals and horses. The amorphous substance is elaborated and metamorphosed by the lymphatic cells of these different animals, and these cells become oxyphile or eosinophile. The condition of immunity of the organism develops contemporaneously with the metamorphoses of the cells under the influence of the TC. A fundamental fact is that the TC, although it is a substance that cannot

be reproduced, possesses the power of giving origin to tubercle. The tubercle thus produced does not undergo caseation and never softens. It corresponds exactly to 'Laennec's granulation tuberculeuse.' Under certain conditions the TC can also produce the 'gray infiltration' and the 'gelatiniform infiltration' of Laennec.

"By means of experiments on different mammals I have been able to satisfy myself that the TC, pre-existing, as I have said, in tubercle bacilli, can be elaborated *in vitro* in such a manner as to be capable of being applied as a remedy which can be employed without danger to the treatment of disease in man."

#### JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

Stated Meeting, held October 9, 1905.

##### Exhibition of Medical Cases.—By Dr. Barker.—

**Case I.**—Male, twenty-nine years old; weaver by trade, came to the hospital complaining of "rheumatism and soreness in feet and thighs." His family history and his personal history before the present illness were negative. He had a moderate alcoholic history; denied lues and gonorrhea. Two years before admission he had a sharp pain in his lower abdomen running to end of penis, and with it a hematuria which lasted two or three months. About eighteen months ago he had an iritis; later, a soreness in the balls of his feet passing up his legs and thighs to his neck. Nine months ago he stopped work. On examination his deep reflexes were exaggerated and a slight patellar clonus present, but no disturbed sensations. Babinski's and Oppenheim's signs were negative. On pressure on bottom of calcaneum about attachment of long plantar tendon below plantaris Bascia there was marked tenderness to which patient ascribed his lameness. X-ray plates showed a spicule of bone on each heel in front of tuber calcaneum. These were secondary to the old urethritis.

In discussion, Dr. Baer told of six cases from his clinic in the last three years, from two of which he got gonococcus in pure culture, from two the stained organism in section. One case was not operated on, and one showed no organisms. These cases were all bilateral in males and within one year after urethritis.

**Perichondritis.**—**Case II.**—Male, twenty-seven years of age, Pole, cigarmaker; complained of "rheumatism and swelling in the neck." Family history, negative. Denied lues, but three years ago had chancroid. August of this year he had pain in right shoulder and right hip, the shoulder being hot, swollen and tender. Pain shifted to right ankle, left knee and left metatarsophalangeal joints. Patient then noticed a swelling of his Adam's apple, but it was associated with no dysphagia or bone changes; also, there was tenderness in was negative. The swelling of Adam's apple showed on examination a tenderness in the right thyroid cartilage extending down over the cartilages of the trachea. The condition suggests a perichondritis following gonorrheal infection.

**Case III.**—Male, fifty-three years of age, bricklayer; complained of weakness and great thirst. Family and personal history, unimportant. His present illness dates from three months ago. Six weeks ago noticed he was passing large quantities of urine and had lost weight and strength. On examination patient's entire body surface was deeply pigmented. There was some urticaria, and scattered over the body were areas of erythema. A blood-count showed, reds, 5,304,000; whites, 9,200, and hemoglobin, 94 per cent. The urine



showed 11 per cent. of sugar, glucose; the mucous membranes were not pigmented. The liver was very much enlarged, reaching 12 cm. below the costal margin; the spleen was easily palpable at edge of left hypochondrium. The case showed a general pigmentation or bronze diabetes with hypertrophic cirrhosis of the liver and a large spleen. Pathologically these cases show large quantities of pigment in the epithelial cells of liver and pancreas. Both hemosiderin and hemofuchsin are greatly increased. The livers have been found to have as high as 55 per cent. of iron in their ash. The diabetes is a secondary condition due to the increase of the connective tissue in the pancreas. Most of the cases reported are in males of forty to fifty years.

**Inversion of Uterus.**—By Dr. J. Whitridge Williams.—*Case I.*—Woman, twenty-four years old; married two years; miscarriage at sixth month fifteen months before. Went to term this time; labor was normal through first and second stages. The Cr  d   method being ineffectual in removing the placenta it was removed manually. The patient was very much shocked, but there was no hemorrhage. Twenty-four hours later Dr. Williams found her radials pulseless, heart rate 168, and the patient bathed in sweat. Palpation disclosed a firm hard mass in abdomen, and on vaginal examination the pelvic cavity was found filled with a large round mass with ragged edges. Above the tumor mass was the firm hard cervical ring through which the uterus had inverted. The ring was dilated manually, and the uterus, being reverted, promptly retracted and forced the hand out. The patient's condition improved rapidly, pulse was 100, and she was out of danger in a few hours.

*Case II.*—Girl, twenty-one years of age; primipara delivered by forceps and placenta removed manually. Seeing her in consultation on the third day her pulse was 140 and her uterus inverted, the cervix was hard, about the size of a dollar, and had the inverted uterus gripped around the neck. There was marked pressure on the bladder, which was greatly distended with bloody urine. Being unable to dilate the hard cervix laparotomy was done, the cervix incised and with fingers in the vagina the uterus was reverted, the patient making a satisfactory recovery. Inversions of the uterus mostly occur in primipara attended by ignorant midwives, and are caused by traction on the cord or by too great pressure on the uterus from above.

**Thoracic Aneurisms.**—By Dr. Baetjer.—The X-ray has thrown most light on the chest and its diseases. We can now practically make positive and negative diagnoses. Both the radiographic and fluoroscopic methods are used in examinations. The routine in this hospital is to make a physical examination, first to see that there are no abnormalities, then placing the tube on a level with the third rib twenty-four inches from the patient's back, examine the chest from the front. The patient is turned around and examined in the same way from the back, and then sidewise by transverse illumination. In this way we cannot only get location of aneurism, but we can see whether or not it is pedicled. The normal fluorescent screen reveals the dark line of the spine and sternum about two inches wide, the shadows of the pulsating heart and of the diaphragm. Any shadow to right or left of sternum is abnormal and may be due to enlarged glands, new growth or aneurism. The shadow of a new growth is darker and more hazy than shadow of aneurism. Dilation of the aorta is positive; when in pulsation the aorta disappears behind the sternum. To make a diagnosis of aneurism the shadow must persist between pulsations.

*Regular Meeting, held October 23, 1905.*

**Cystic Kidney.**—Dr. R. I. Cole presented a man, forty-one years; complaint, "pain, shortness of breath and weakness in back." He did not know date of onset. Fifteen years ago, after rowing, he noticed an enlargement of his abdomen, but it gave him no discomfort. Eight years ago a physician told him he had albumin in his urine. Two years ago his color changed; he became cyanosed, and there was pigmentation over his forehead and cheeks. On admission to the hospital the patient showed some cyanosis, a moderate grade of arteriosclerosis and signs of cardiac weakness, but no murmurs. His abdomen was distended, with distinct bulging in the flanks. As soon as the ascites had decreased, there was made out a large mass in the left flank, deep in the abdomen. It could be lifted forward from behind and had an irregular surface with prominences, one of which resembled a ball 3 or 4 cm. in diameter. On the right side, in a similar position, is a like tumor reaching down into the pelvis. It is far back in the abdomen and can be lifted forward. It also has irregularities. The patient shows symptoms of cystic kidneys. He has signs of cardiac weakness. Urine of low specific gravity, some albumin and casts. While in the hospital the swelling of his legs and ascites disappeared, and his shortness of breath improved. Up to this time he had never had blood in his urine, but a few days after his discharge from the hospital he returned with some bloody urine which he had passed. The patient also shows a pigmentation over forehead and cheeks, in addition to the cyanosis which is constantly present. The hematuria may be due to rupture of small vessels between the cyst walls. The signs of cystic kidneys are, signs of large bilateral tumors, signs of cardiac weakness, signs of chronic nephritis and hematuria. Three of Dr. Osler's four cases were recognized during life.

**Pulsating Empyema.**—*Case I* was admitted to the surgical wards in April, complaining of "trouble with his lungs." He had had an attack of pneumonia in December, which lasted for five or six weeks, and left him weak and losing strength. Ten days before admission he had marked exacerbations of pain and weakness, and continued to grow weaker. He was aspirated and a small amount of purulent fluid removed. The entire left side of the chest was bulging, and there was dulness in the supraclavicular fossa and flatness through the entire left chest below. There was an impulse in the third and fourth interspaces to the right of the sternum. The whole front and axilla of the left chest showed a visible pulsation, forcible, diffuse and systolic in time. The chest was opened from behind and a large amount of pus removed. The patient left the hospital in good condition. *Case II* was admitted in January, complaining of "shortness of breath." He had signs of a pleural effusion on the left side. The chest was aspirated and at different times eleven, twelve and thirteen hundred c.c. of fluid were removed. Tubercle bacilli were demonstrated in the fluid. The patient improved and left the hospital practically well in March. He returned in June with shortness of breath and an irregular fever. A needle was inserted and a small amount of bloody fluid was removed, which contained many mononuclear and but few polymorphonuclear cells. About the first of October there was a bulging in the left axilla; October 17 there was a definite area of pulsation, which tracings showed to be systolic in time, in the third and fourth interspaces outside the mammillary line. Cardiac dulness reached 8 cm. to right of midsternal line. There was tympany in Traube's space, the dulness reaching only to the fifth rib. It was thought at first to be an

encapsulated tuberculous pleurisy, but aspiration showed a purulent fluid in which polymorphonuclear cells formed 94 per cent. of the total cells. A rib was removed from the back and the cavity drained. The patient is in good condition. Dr. Sailer recently went over the literature and found ninety-seven cases of pulsating empyema reported. Among the earliest reports are the three cases reported, in 1840, by Dr. McDonald, of Montreal, and the cases by Stokes, of Dublin. Twelve of the ninety-seven cases were serous effusions. The probable explanation of the pulsation is that ordinarily the elasticity of the lung takes up the pulsation, but if the lung be held firmly by adhesions, or is completely compressed, the pulsating waves are entirely spent upon the chest wall. To pulsate, the fluid must always be under high pressure.

**Congenital Cystic Kidney.**—Paper read by Dr. C. H. Bunting.—Cystic kidney is the large polycystic kidney of the French. The first cystic kidney reported was at the Royal Society in Paris before 1725. The first congenital cystic kidney was reported before 1790. The last summary, made in 1900, gives two hundred cases in adults—ninety congenital and thirteen in infants. Cystic kidney happens in .15 per cent. about the same proportion in each sex, and may be found in subjects from premature or stillborn to old age. There is a remarkable family tendency. Virchow reports cases in which four of six children were affected. Singer reports a family in which the first, fourth, seventh, tenth and thirteenth children had bilateral cystic kidneys, the other children being normal. The condition also appears in the second generation, though there is only one case reported of crossed inheritance, all the others being from father to son or mother to daughter. The kidneys of the new-born may be very large; cases being reported in which the pair weighed over a thousand grams. In the adult they have weighed over five thousand grams. Among the sections shown were gross specimens of kidneys from two children of the same mother. In the cortex of these were fine cysts. In the liver the portal surfaces had the appearance of an oak leaf. Through the medulla there was marked dilatation of the ducts, some of them divided up into finger-like processes. There were mitotic figures present. In the liver there was increase in the size and number of the bile ducts. Cystic liver occurs in 20 per cent. of the cases of cystic kidney. In the adult these cysts are lined with flattened epithelium and have a fluid content but no connection with the bile ducts. The theories of formation of cystic kidneys are grouped under four heads: the obstruction theory, new growth theory, malformation in the development, and the group placed between malformation and new growth. Virchow believed at first in the obstruction theory. In 1875 an advocate of the new growth theory claimed that there were outgrowths from the tubules which were solid or tubular and underwent a colloid degeneration. These are analogous to adenocystomata of the ovaries. The malformation theory dates from Kussner who thought there was a failure of collecting tubules to open into the pelvis. The advocates of the fourth theory thought it was a failure of the undifferentiated epithelium to grow in equilibrium. These lesions are of epithelial hyperplasia, which would not be included among new growths; they are adenocystomata. The ducts in the pancreas and liver show the same hyperplastic condition. These cases can show malformations in other parts. Polydactylism, hydrocephalus, harelip, atresia of anus or vagina, rectovesical fistulae, heart lesions, patent ductus Botalli and many associated defects in the genito-urinary organs have been found in these

cases. The lesion is more nearly related to congenital malformation than to new growth, and we must look in the parents for the cause. Only 10 per cent. of cases are unilateral. Cystic kidneys may be found in all ages from infants to adults of eighty years. As a rule, if there is enough cortex for the person to live for a while after birth, he may live a normal lifetime unless cut off by chronic nephritis. In adults with cystic kidneys there are the same associated malformations and liver conditions. It is very difficult in the adult kidney to make out anything in regard to the pathogenesis or histogenesis on account of the great changes that have taken place.

*Regular Meeting, held November 6, 1905.*

The President, W. G. MacCallum, M.D., in the Chair.

**Anomalous Cardiac Murmur.**—Dr. W. S. Thayer exhibited a colored male patient, fifty-seven years old; admitted sixteen times, the first being in 1896. He gave a history of only ordinary children's diseases; lues was denied. On first admission he showed edema of legs, shortness of breath, albumin in urine and dilated heart, which symptoms cleared up under treatment. He had an attack of rheumatism of doubtful nature during the next year. On admission to 1903 his heart was more and more dilated with a systolic murmur at apex. At that admission the apex was in the seventh interspace with a systolic murmur. In the fifth interspace in the parasternal line there was a peculiar murmur of decreasing intensity, beginning after a slight pause after the second sound, and ending just before the first sound. It was in every way similar to a diastolic murmur of mitral stenosis, except for its position. The patient on exhibition had a greatly dilated heart with tricuspid insufficiency, systolic pulsation in veins of neck and in liver. The first sound was replaced by a soft systolic murmur, and the second pulmonic was louder than second aortic. There was no suggestion of aortic valvular disease, and no evidences of a true organic mitral lesion. The murmur was heard in area where murmur from tricuspid ought to be heard best when the blood is flowing from right auricle to right ventricle, but there was nothing that would point to tricuspid disease; besides, murmurs in tricuspid stenosis are very rare. Had there been an aortic lesion, a faint murmur heard in this region, instead of its usual area near the apex, might be considered. The patient has a marked grade of sclerosis. Might not sclerotic atheromatous changes, extending from the aorta to the anterior mitral curtains, cause a slight interference to the passage of blood from the left atrium to the left ventricle by a thickening of the curtain. The sound began with a slight shock. The opening snap of mitral valve from relaxation of ventricle and pressure of blood from above might be caused by such a condition. The snap begins at the beginning of diastole. There was thought not to be mitral endocarditis, but a dilated and hypertrophied heart secondary to arterio-sclerosis. There was a mitral and tricuspid insufficiency due to dilatation of the ring. The murmur was thought to be produced at either one or the other of these valves, most probably the mitral.

**Marked Grade of Enteroptosis.**—Patient was a black female, aged forty-five years. She had a pulmonary tuberculosis involvement. The abdominal wall was remarkably relaxed. The liver edge was



practically normal. Below it, just below the umbilicus, was a shadow descending on inspiration, with peristaltic waves passing from left to right, which on dilatation proved to be stomach. The stomach was entirely below the ribs, the tympany of the fundus beginning at the costal margin. The right kidney was very movable.

**The Significance of Casts in the Urine.**—Dr. C. P. Emerson said that cylindruria is the occurrence of casts in the urine in various conditions. *Cast varieties:* epithelial casts are distinctly made up of cells with round nuclei. They are parts of the tubules below the loops of Henle and have lumina which can be seen. In addition to these, but which go under the same name, are hyaline casts with one, two or a few cells with round nuclei. Many of these cells have a perfectly clear protoplasm, though the kidney cells are granular. Those of the first type are rare. They occur in acute nephritis. Those of the second type are common. They can be found in bicycle riders and athletes, as can blood casts, for a ring of red blood cells washed out of the tubule is not uncommon after hard exercise; but the hyaline type with a few blood cells attached occurs in hemorrhagic nephritis. A true pus cast occurs in purulent nephritis, but hyaline casts with pus cells attached are found in athletes. Coarse granular casts are opaque with very coarse granules. They are not translucent, and evidently are pus or epithelial casts gone to pieces. The next stage in the degeneration of these form the waxy casts which are of two varieties, white and yellow, both of which tend to split transversely. The true hyaline cast is faint and watery, and is seen by shutting off the light. It is found wherever albumin is expected, and does not stain by iodine. There is a cast usually called a hyaline, though it is not, which is not so refractile as the waxy casts, that occurs in nephritis or long-standing renal trouble, and stands between the waxy and hyaline groups. Associated with this intermediate group are very translucent fine granular casts. The waxy casts are the modified granular casts. These may be found from a normal kidney in the last few c.c. of urine secreted line type with a few blood cells attached occurs in after death when they were not present before death. Also one can get waxy casts in all states of the urine in the tubules. Fifty casts have large globules of fat in casts made up of cells. In the last five years every case of fatty casts in the Johns Hopkins Hospital was malarial. However, sometimes in nephritis the renal cells will be swollen with fat globules, and all transitions between cells and fatty cast formations can be seen. There may be globules of myelin degeneration in the cells. These do not take osmic acid and may form a true myelin cast. Cases were studied anatomically, in which there had been a clinical diagnosis of nephritis. In cases of chronic passive congestion, where there had been a clinical diagnosis of nephritis, there were no anatomical evidences, though there were all varieties of waxy casts. In cases of cloudy swelling, where there had been all varieties of casts, there were no evidences of nephritis. Cases of fatty kidneys had been diagnosed nephritis. In top cases of acute nephritis the diagnosis could not be made, except from the urine, but acute nephritis and exacerbations of chronic nephritis cannot be distinguished by urine alone. In acute parenchymatous nephritis, to make a diagnosis, one must have a history of the patient, a cast picture

and patient under thirty-five years. In chronic interstitial nephritis there were two types, the small white kidney and the small red kidney; the latter due chiefly to arteriosclerosis. In the cases of small red kidney the trace of albumin had been of longer duration than in the small white type, and the casts had disappeared first. In the small white type the albumin cleared up first. Of eighteen cases of amyloid kidney one-fourth had large amounts of urine and albumin, but very few casts. The more acute the attack, the more epithelial blood and pus casts are present. In the chronic attacks these disappear and are replaced by waxy, hyaline and granular casts. These cases can be followed by the casts alone.

Cylindruria, *i.e.*, presence of casts, may be present without albumin, if the urine is examined fresh, centrifugized and carefully searched. A slight disturbance of the kidneys, *e.g.*, manipulation in some cases of palpation, may make casts and no albumin or the reverse, or both, findable. The cases of chronic nephritis with history of small white kidney, may have casts with no albumin. Of transient cylindrurias there are the class following the use of drugs, *e.g.*, sodium, salicylate, though the casts disappear as soon as the medicine stops. Alcohol in moderate doses will cause cylindruria in over one-half the cases; in others, albuminuria Ung. hydrarg. also may cause the pressure of casts. Many of the acute diseases, as erysipelas, scarlet fever, tonsillitis and diphtheria, may have symptoms of nephritis, but in some conditions only casts can be found. The point to be emphasized is that the number of cases that show casts if looked for are many, and albuminuria is often present in practically normal urine. Showers of casts may appear in diabetic coma, sometimes without albumin; they appear suddenly. There are no epithelial or waxy casts, but those present are hyaline or purely granular. May get showers in exacerbations in nephritis after diuretics, or, as a terminal, the last two or three days before death. In chronic constipation there may be found a pure cylindruria. It is an inflammatory or irritative process, not a degeneration that causes casts. The greatest number of casts are gotten from kidneys that are but slightly diseased. A most brilliant display of casts can be gotten by the disturbance of a normal cortex in a small granular kidney, and the least number when the cortex is extensively diseased. The more normal the cell, the better its cast-producing quality. The number and kinds of casts are indications of the temporary condition of a normal kidney. The specimen should be centrifugized and examined carefully immediately after voiding, instead of a 24-hour specimen. Epithelial, blood and pus casts do not have so very much significance. Cells of casts should be studied as to whether they are epithelial cells or pus cells, for these casts are certainly present more often than recorded.

Dr. W. G. MacCallum, in the discussion, said the fact that there is a less abundant supply of casts in the contracted kidney is because the epithelial cells are gone. The active process is in the large kidney where there is a greater mass of degenerating epithelial cells. The large white and the small kidneys should not be so carefully subdivided, for they represent conditions more or less severe in different stages. There should be some uniformity of the casts in acute kidneys and the kidneys in exacerbation.



**Demonstration of the Spirochæta Pallida.**—Dr. Keidel demonstrated three specimens of *Spirochæta pallida*. He said the organism was found in nearly all lesions of primary syphilis. One of the specimens was gotten from serum from a primary sore; the others from condylomata. They were stained with eosin azure after Schaudinn's methods. The organism is not at all refractile. It is spiral, 4 to 10 microns in length,  $\frac{1}{4}$  of a micron thick, with spirals about 1 micron apart. *Spirochæta refringans* can be easily differentiated, from *pallida* by being coarser the spirals being flat, more irregular and undulatory. *Refringans* also stains easier and is more refractile. *Spirochæta pallida*, which may be a protozoan, has not been cultivated on artificial media.

### BOOK REVIEWS.

**A MANUAL OF MIDWIFERY FOR STUDENTS AND PRACTITIONERS.** By HENRY JELLETT, B.A., M.D., Gynecologist and Obstetric Physician to Dr. Steevens' Hospital, Dublin; Extern Examiner in Midwifery, Royal University of Ireland; Examiner in Midwifery, Royal College of Physicians, Ireland; Ex-Assistant Master, Rotunda Hospital; Ex-University Examiner in Midwifery and Gynecology, Dublin University. Wm. Wood & Co., New York.

Dr. JELLETT, in collaboration with several authors, has presented a comprehensive account of the theory and practice of obstetrics, for the most part modern. In the chapter describing fetal development, the formation of the fetal envelopes of the chick is given, but no mention is made of the present-day theory of Sobotta and the observations of Peters, which would strongly suggest that the amniotic sac in many mammals is formed by a splitting of the primitive ectoderm and not by the folds growing up around the embryonic area. In the same chapter the umbilical cord is described as being covered by amnion, a statement which would not meet the approval of most embryologists as most observers now consider the epithelium of the cord to be epidermal, representing a prolongation of fetal skin. The chapter on Asepsis and Antisepsis is of historical and practical interest. The attitude of the author with regard to antiseptic douching is in accordance with American ideas in that no douche should be given without definite indications. The chapter devoted to the phenomena of normal labor is well put together and includes an interesting digression on the Prognosis of Labor. The causes of death from labor are grouped under three heads: Purely obstetrical causes; pre-existing disease of the mother, and accidental causes. Much valuable information is given from the records of the Rotunda Hospital and the statistics of the Registrar-General. In considering the mechanism of normal labor, two positions are described, a right and a left, corresponding to the first and second positions of the German schools. The description is generally clear and accurate. In the chapter on the Pathology of Pregnancy many time-honored theories of eclampsia are given and a number of present-day ideas on the toxemia of pregnancy are presented in brief. The subject of extra-uterine pregnancy is well written. The writer, however, has given the impression that the sole cause of primary rupture of the tube is the distention, while no mention is made of the important part played by the erosion of the tube wall by villi and syncytial buds. The sections on puerperal infections, obstetrical operations and the care of the infant are admirable. The work as a whole is scientific

and practical and merits a place among the best textbooks on the subject.

**THE EYE; ITS REFRACTION AND DISEASES.** By EDWARD E. GIBBONS, M.D., Assistant Surgeon of the Presbyterian Eye, Ear and Throat Hospital; Demonstrator and Chief of Clinic of Eye and Ear Diseases in the University of Maryland, Baltimore. Volume II. The Macmillan Company, New York and London.

THE first volume of this work which has been favorably reviewed in these columns is devoted entirely to refraction and to a consideration of the optical properties of the eye, and is in many respects an admirable book.

The present volume deals with diseases and operations. It is evident that the bent of the author's mind is toward the part of the subject treated thoroughly and with much individuality in the previous volume. For although the second part is not lacking in excellence, it does not show the same originality and clearness of conception. The chief criticism is that, in places, there is a lack of orderly classification, producing a rather confused and uneven result.

### BOOKS RECEIVED.

**INDIGESTION.** By Dr. George Herschell. Third edition. 8vo, 293 pages. W. T. Keener & Co., Chicago.

**DIABETES MELLITUS.** By Prof. Dr. Carl von Noorden. 12mo, 211 pages. E. B. Treat & Co., New York.

**TRANSACTIONS OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK FOR 1905.** 8vo, 445 pages. Illustrated. Published by the Society.

**ABDOMINAL OPERATIONS.** By Dr. B. G. Moynihan. 8vo, 694 pages. Illustrated. W. B. Saunders & Co., Philadelphia and London.

**MT. SINAI HOSPITAL REPORTS.** Volume IV. 1903. Edited by Dr. N. E. Brill. 8vo, 418 pages. Illustrated. Published by the Hospital.

**TRANSACTIONS OF THE AMERICAN OTOLOGICAL SOCIETY.** Thirty-eighth Annual Meeting. 244 pages. Illustrated. Published by the Association.

**CLINICAL METHODS.** By Drs. R. Hutchison and H. Rainy. Ninth edition. 12mo, 634 pages. Illustrated. W. T. Keener & Co., Chicago.

**A MANUAL OF CHEMISTRY.** By Drs. A. P. Luff and F. James. Third edition. 12mo, 556 pages. Illustrated. W. T. Keener & Co., Chicago.

**PRACTICE OF MEDICINE.** By Dr. J. M. Anders. Seventh edition. 8vo, 1,297 pages. Illustrated. W. B. Saunders & Co., Philadelphia and London.

**MANUAL OF CHEMISTRY.** By Dr. W. Simon. Eighth edition. 8vo, 640 pages. Illustrated. Lea Brothers & Company, Philadelphia and New York.

**HYGIENE AND PUBLIC HEALTH.** By Drs. B. A. Whitelegg and Geo. Newman. New edition. 12mo, 636 pages. Illustrated. W. T. Keener & Co., Chicago.

**LECTURES ON PRINCIPLES OF SURGERY.** By Dr. C. B. Nancrede. Second edition. 8vo, 407 pages. Illustrated. W. B. Saunders & Co., Philadelphia and London.

**TRANSACTIONS OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION.** Twenty-seventh Annual Meeting. 8vo, 360 pages. Illustrated. Published by the Association.

**PRINCIPLES OF BACTERIOLOGY.** By Dr. A. C. Abbott. Seventh edition. 8vo, 690 pages. Illustrated. Lea Brothers and Company, Philadelphia and New York.

**ATLAS AND EPITOME OF DISEASES OF THE SKIN.** By Dr. F. Mrazek. Second edition. Edited by Dr. H. W. Stelwagon. 12mo, 271 pages. Illustrated. W. B. Saunders & Co., Philadelphia and London.